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Appendix to  
**the RICE  
ECONOMY  
OF ASIA**

**Beth Rose**

THE  
RICE  
ECONOMY  
OF  
ASIA

Randolph Barker  
Robert W. Hendt  
with Beth Rose

**Resources for the Future**

**In cooperation with The International Rice Research Institute**

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Appendix to

The Rice Economy of Asia:

Rice Statistics by Country,

Tables with Notes

Beth Rose

NOTE

This appendix is a companion volume to The Rice Economy of Asia by Randolph Barker, Robert W. Herdt, with Beth Rose.

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## CONTENTS

I. China	6
II. Taiwan Province	35
III. Japan	58
IV. Korea, Pre-war	89
V. Korea, North	97
VI. Korea, South	102
VII. Indochina	117
VIII. Kampuchea	125
IX. Laos	134
X. Vietnam	141
XI. North Vietnam	150
XII. South Vietnam	156
XIII. Java and Madura	173
XIV. Indonesia	190
XV. Malaya	208
XVI. West Malaysia	216
XVII. Sabah	228
XVIII. Sarawak	237
XIX. Philippines	250
XX. Thailand	276
XXI. Burma	301
XXII. Bangladesh	322
XXIII. India	336
XXIV. Nepal	359
XXV. Pakistan	370
XXVI. Sri Lanka	383

Appendix Tables and Statistical Notes by Country

INTRODUCTION

This appendix includes 26 tables, each containing an historical series of annual rice statistics for a specified country in Asia. The data cover the period from the turn of the century, continuing through the early 1980s. The statistics that appear in the tables were primarily gathered from official government sources. Occasionally, due to a lack of published official data, it was necessary to include non-official series or U.S. Department of Agriculture estimates. There is no inherent reason to believe that country sources are always more accurate than those provided by agencies collecting international series such as USDA or FAO. However, outside agencies are ultimately dependent on data generated within the country. Thus, it was felt that national series would be of most interest and use to Asian scholars.

In preparing the rice statistics tables, Asia was first divided into broad geographic categories: East, Southeast, and South. The regions were further subdivided into areas or countries as follows:

East Asia

I.	China	1914-1982
II.	Taiwan Province	1900-1982
III.	Japan	1900-1982
IV.	Korea - Pre-war Korea	1910-1938
V.	Korea - North Korea	1945-1982
VI.	Korea - South Korea	1945-1982

Southeast Asia

VII.	Indochina	1912-1944
VIII.	Kampuchea (Cambodia)	1940-1982
IX.	Laos	1947-1982
X.	Vietnam	1950-1982
XI.	Vietnam - North Vietnam	1950-1975

Southeast Asia (Continued)

XII.	Vietnam - South Vietnam	1947-1975
XIII.	Indonesia - Java and Madura	1916-1981
XIV.	Indonesia	1950-1982
XV.	Malaysia - Malaya	1918-1949
XVI.	Malaysia - West Malaysia	1947-1981
XVII.	Malaysia - Sabah	1951-1980
XVIII.	Malaysia - Sarawak	1952-1980
XIX.	Philippines	1903-1981
XX.	Thailand	1902-1982
XXI.	Burma	1900-1981

South Asia

XXII.	Bangladesh	1944-1981
XXIII.	India	1901-1982
XXIV.	Nepal	1957-1982
XXV.	Pakistan	1947-1982
XXVI.	Sri Lanka	1920-1981

Over the course of the century and especially since World War II, many changes have taken place in Asian geographical boundaries. For example, Pakistan, formerly part of India, became independent in 1947. In addition, in the pre-World War II period, many Asian regions or countries only collected data for areas under firm central control. For example, no data exist for Indonesia in toto in the pre-war period, although ample data were collected for Java and Madura. Separate tables were created for Java and Madura and Indonesia to deal with this problem. In spite of the difficulties created by boundary changes, we have tried to provide continuous data for the same physical area whenever possible. Careful note has been made on every table explaining geographical changes that have occurred throughout the course of the time span covered by the table.

The section for each country or cluster of countries begins with a brief description of the statistical system employed by the country to gather rice

production data. The tables themselves, together with notes and data sources, are presented next. The table formats are similar across countries and contain data series on total crop area; rice production, area, and yield; rice area irrigated; quantities imported and exported; the price of unmilled rice at the farm and of milled rice at the wholesale and retail levels; farm wage rates; population; and the apparent per capita availability of rice. Also included is information, such as acronyms and conversion factors, designed to assist the reader in interpreting the information.

The use of foreign language sources is unavoidable, as many countries do not have complete sources available in English. We have tried to provide at least a few English language sources for those who may not have the appropriate foreign language capability.

Although some of our series may be of questionable accuracy, it is easy for the reader to make his/her own judgments based on referral to the footnotes or the complete source listings. Thus, the tables should satisfy those who are interested in an easy statistical reference as well as those who have a deeper interest.

#### Basic Conversion Factors

1 acre = .405 ha.	1 ha. = 2.469 acres
1 long ton (2240 lbs.) = 1.016 mt.	1 mt. = .984 long tons
1 short ton (2000 lbs.) = .907 mt.	1 mt. = 1.102 short tons
1 pound = .454 kg.	1 mt. = 2204.63 lbs.
1 cwt. (100 lbs.) = .0518 mt.	1 mt. = 19.684 cwt.
1 mt. = 10 quintals = 1,000 kilograms	
100 kg./ha. = 1.4869 bushels (60 lbs.)/acre	
1 bushel (60 lbs.)/acre = 67.253 kilograms/ha.	

Basic Conversion Factors (Continued)

1 square mile = 2.590 sq. kilometers

1 square mile = 640 acres = 259 ha.

1 square kilometer = 100 ha.

Interpretation of Tables

1. Unless otherwise stated, assume all years to be in crop years, that is, for example, 1979 = fall 1979, spring 1980 for rice production and area, but calendar years (January-December) for rice prices and rice imports and exports.
2. A blank space means no data are available at present.
3. A dash (-) means no or negligible value.
4. NA means data not available and are unlikely to appear in the future.
5. Rice area includes double and triple-cropped area unless otherwise indicated.
6. Rice area is assumed to be harvested area unless otherwise stated.
7. All arable land is counted on a calendar-year basis when FAO is the stated source.
8. USDA 1982 rice area, production, and yield figures are provisional and may be subject to revision.
9. Irrigated area figures refer to man-made irrigated cultivated area unless otherwise stated and do not include rainfed area.
10. All wholesale and retail prices are free-market prices unless otherwise indicated.
11. When numbers are rounded, all numbers five and greater were rounded up; all numbers four and smaller were rounded down.
12. Data on cultivated land per person are calculated by dividing cultivated land (1) by population (8) on an annual basis.

EAST ASIA

I. China	6
II. Taiwan Province	35
III. Japan	58
IV. Korea - Pre-war Korea	89
V. Korea - North Korea	97
VI. Korea - South Korea	102

I. PEOPLE'S REPUBLIC OF CHINA\*

Rice Statistics in China

The Chinese rice economy is an integral part of the total Asian rice economy, not only from the viewpoint of internal production and consumption, but also externally as an importer in the pre-war period and as a major world exporter of rice in the post-war period. Unfortunately, between 1900 and the late 1970s, systematic statistical measurement of output and growth in the Chinese agricultural economy has been intermittent at best. Basic published data, when available, were limited to national estimates and have, at times, been obviously inflated under the influence of the prevailing political climates. Because of China's activities on the world grain market and its importance in global politics, Western and Soviet "China Watchers" have invested considerable time and effort in the preparation of estimates using published Chinese estimates and interpolation. However, the majority of these estimates have been mere exercises in the manipulation of a few shaky data points in an attempt to create complete, year-by-year series.

With the exception of the last five years, only a limited number of Chinese statistical sources exist. For the period 1949-1957, most researchers rely on statistics reported in The Ten Great Years, the only official statistical handbook for the period. The Ten Great Years' figures are based on early statistical work carried out by the SSB and, as such, were subject to the problems encountered by any newly-formed, national-level agency. There seems no reason to completely discount agricultural statistics reported herein, as some researchers have done, but the issue is admittedly complex.\*\*

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\*Thanks to Terry Sicular, Gengsheng Xu, Ramon Myers, Bruce Stone, and Fred Surls.

\*\*For further discussion of the problems, see Thomas Wiens, "Agricultural Statistics in the People's Republic of China," ed. by Alexander Eckstein, Quantitative Measures of China's Economic Output (Ann Arbor: University of Michigan Press, 1980), pp. 44-78.

Other than The Ten Great Years, no statistical compendia were published until 1980. Occasional figures were released to the news media or supplied to visitors, but these estimates frequently contradicted one another, and it was impossible to form ongoing series for any data categories without substantial data manipulation. However, in 1979 the government began to publish an annual communiqué, which reported basic national-level output and area statistics for most important commodities, including rice. This communiqué is published in English in the weekly magazine Beijing Review. In 1981, two important statistical compendia, which the Chinese plan to publish on an annual basis, came into existence: Zhongguo jingji nianjian 1981 (Chinese Economic Yearbook 1981) and Zhongguo nongye nianjian 1980 (Agricultural Yearbook of China 1980). Recently, a publication devoted entirely to statistics, Zhongguo tongji nianjian (Statistical Yearbook of China) was added to the growing list of regular statistical periodicals. These statistical compendia contain extensive information on most aspects of the Chinese agricultural economy, including complete time series for rice area, production, and yield. Most of the data in the compendia are at the national level, but provincial information is also provided for basic output and area figures for 1979 and onward.

At present, agricultural statistics are assiduously collected at all levels of the bureaucracy. Statistics are initially collected at the team level and theoretically gradually reported upward to the national level. Crop cutting is generally used to determine rice yields. Rice output is reported in paddy form in dan and jin/mu for yields.

TABLE Ia

CHINA I	Rice prod'n. paddy '000' mt	Rice area sown '000' ha	Rice yield paddy mt/ha	Rice imports milled '000' mt	Rice exports milled '000' mt
Year(A)	2	3	4	5	6
1911				321(F)	
1912				161	
1913				322	
1914	103338(H)	35472(H)	2.91(H)	410	-
1915	95755	22775	4.20	508	-
1916	24105	14304	1.69	681	-
1917	23180	13372	1.73	593	-
1918	12624	9622	1.31	420	-
1919	4086	4030	1.01	35	-
1920	3700	3636	1.02	51	-
1921	2835	3436	0.83	641	-
1922				1156	-
1923				1353	-
1924				796	-
1925				762	-
1926				1129	-
1927				1270	-
1928				764	-
1929				653	-
1930				1201	-
1931	24583(J)	13949(J)	1.76(J)	648	-
1932	27644	14130	1.96	1358	-
1933	24952	13997	1.78	1289	-
1934	20644	13958	1.48	764	-
1935	25222	13963	1.81	1289	-
1936	24046	13544	1.78	283	-
1937	23134	12938	1.79	325	-
1938	25417(M)	13763(M)	1.85(M)	406	-
1939	25964	13810	1.88	313	-

TABLE Ia (cont'd)

CHINA I Year(A)	Farm-harvest price (B) milled yuan/mt	Wholesale rice price (B) milled average yuan/mt	Retail rice price (B) milled yuan/mt	Farm wage rate yuan/day
	9	11	12	13
1900	70(E)			
1901	64			
1902	104			
1903	106			
1904	84			
1905	66			
1906	90			
1907	122			
1908	112			
1909	92			
1910	116		132(E)	
1911	126		144	
1912	126		142	
1913	124	126(G)	128	
1914	108	136	114	
1915	122	144	134	
1916	118	148	128	
1917	108	158	122	
1918	104	163	118	
1919	106	172	114	
1920	144	165	162	
1921	154	196	170	
1922	184	189	204	
1923	192	212	210	
1924	174	212	186	
1925	184	226	202	
1926	246	248	276	
1927		254	274	
1928		219		
1929				
1930				
1931		158(I)		
1932		147		
1933		98		
1934				
1935				
1936				
1937			223(K)	0.21(L)
1938			241	0.21
1939			334	0.29

TABLE Ib

CHINA	Cultivated area '000' ha	Foodgrain sown area (D) (including soybeans) '000' ha	Rice prod'n paddy '000' mt	Rice area sown '000' ha	Rice yield paddy mt/ha
Year(C)	1	1a	2	3	4
1940			21041	13254	1.59
1941			21880	13224	1.65
1942			21598	13519	1.60
1943			20723	13280	1.56
1944			22940	13404	1.71
1945			19999	13164	1.52
1946			30252	17363	1.74
1947					
1948					
1949	97880(P)	110000	48600	25709	1.89
1950	100360	114400	55100	26149	2.11
1951	103670	117800	60600	26933	2.25
1952	107920	124000	68400	28382	2.41
1953	108530	126600	71300	28321	2.52
1954	109350	129000	70900	28722	2.47
1955	110160	129800	78000	29173	2.67
1956	111820	136300	82500	33312	2.48
1957	111830	133600	86800	32241	2.69
1958	107790	127600	80900	31931	2.53
1959	107340	116000	69400	29049	2.39
1960	105500	122400	59700	29622	2.02
1961	103300	121400	53600(x)	26289(x)	2.04(y)
1962	102600	121600	63000	26948	2.34
1963	103000	120700	73800	27729	2.66
1964	103200	122100	83000	29621	2.80
1965	103590	119600	87700	29840	2.94
1966	102900	121000	95400	30543	3.12
1967	102700	119200	93700	30451	3.08
1968	101500	116200	94500	29909	3.16
1969	101400	117600	95100	30447	3.12
1970	101100	119300	110000	32374	3.40
1971	100800	120800	115200	34935	3.30
1972	100600	121200	113400	35160	3.23
1973	100300	121200	121700	35108	3.47
1974	100000	121000	123900	35530	3.49
1975	99710	121100	125600	35747	3.51
1976	99400	120700	125800	36235	3.47
1977	99300	120400	128600	35544	3.62
1978	99400	120600	136930	34438	3.98
1979	99500	119300	14375	33890	4.24
1980		117293	139910	34896	4.01
1981		115015	143960	33311	4.32
1982			161240		

TABLE Ib (cont'd)

CHINA	Area	Rice	Rice	Population	Farm-harvest
Year (C)	irrigated '000' ha	imports milled '000' mt	exports milled '000' mt	year-end million persons	price(N) paddy yuan/mt
	5	6	7	8	9
1940		645			
1941					
1942					
1943					
1944					
1945					
1946					
1947					
1948					
1949	16000(Q)			542(R)	
1950	16700		49	552	
1951	18700		127	563	
1952	21300		335	576	
1953	22000		561	589	
1954	23300		540	603	
1955	24700	158(V)	700	616	
1956	32000	87	1077	630	
1957	34700	111	529	647	
1958	40600	12	1397	660	
1959		-	1774	666	
1960		28	1072	658	
1961		62	428	641	
1962		5	458	659	
1963		97	685	681	
1964	33800	76	762	702	
1965	35100	112	985	722	
1966	37800	52	1487	741	
1967		22	1577	761	
1968		33	1299	782	
1969		5	1179	803	
1970	40100	8	1280	826	
1971	41400	19	1292	847	
1972	45800	-	1426	868	
1973	43300	102	2631	887	
1974	43300	30	2061	904	
1975	48100	114	1630	920	
1976	48700	-	876	933	
1977	46700	-	1033	945	
1978	47300	71	1435	958	
1979	48000	18	1053	971	
1980		110	1116	982	383(AA)
1981		250	470	996	373
1982		150	700	1084(BB)	

TABLE Ib (cont'd)

CHINA	Procurement price (N) paddy yuan/mt	Official retail price (N) Beijing yuan/mt	Farm wage rate yuan/day	Domestic apparent per capita paddy availability (O) kg/cap/yr
Year(C)	10	12	13	14
1940		833	0.81	
1941		3074	2.14	
1942		7834	5.38	
1943		21091	20.70	
1944		59754		
1945		326050		
1946		632988		
1947		6888147		
1948				
1949				90
1950	(s)			100
1951				108
1952	113(T)	296(U)		119
1953		304		121
1954		304		117
1955		304		127
1956		304		131
1957	124	304	0.11(W)	134
1958		304		123
1959		304		104
1960		304		91
1961		304		84
1962	165	304		96
1963		304		108
1964		304		118
1965	169	304		121
1966	196(Y)	304		129
1967	196	304		123
1968	196	304		121
1969	196	304		118
1970	196	304		133
1971	196	304		136
1972	196	304		131
1973	196	304		137
1974	196			137
1975	196		0.17	137
1976	196			135
1977	196		0.18	136
1978	220	304	0.20	143
1979	234		0.28	148
1980	234		0.24	142
1981	237	304		145
1982				149

TABLE Ib (cont'd)

CHINA	Early rice area '000' ha harvested	Early rice production '000' mt paddy	Early rice yield mt/ha paddy	Cultivated ha/person
Year(C)	15	16	17	18
1949				.18
1950				.18
1951				.18
1952				.19
1953				.18
1954				.18
1955				.18
1956				.18
1957				.17
1958				.16
1959				.16
1960				.16
1961				.16
1962				.15
1963				.15
1964				.15
1965				.14
1966				.14
1967				.13
1968				.13
1969				.13
1970				.12
1971				.12
1972				.11
1973				.11
1974				.11
1975				.11
1976				.11
1977				.10
1978	12189(z)	50810(z)	4.17(z)	.10
1979	11422	51980	4.55	.10
1980	10110	49140	4.42	
1981	10641	49540	4.66	
1982	10667	53400	5.01	

Notes to Appendix Tables Ia and Ib: China

A/ The official collection of output statistics on a national level did not commence until 1912, although local levels had been monitoring grain prices as part of their price stabilization and famine relief programs since the beginning of the Qing Period. On January 1, 1912, the Ministry of Agriculture and Commerce issued a regulation that called for a nation-wide investigation of industry and commerce. Local magistrates were required to collect and report data for specific categories to xian governments, which, in turn, reported them up to the provincial level. In 1913, the Ministry was reorganized into the Ministry of Agriculture and Commerce, and the first agricultural statistics were collected in 1914. However, the quality of statistics is variable both through time and across provincial boundaries. Many provinces did not report or reported only in part. Governmental disruptions caused by warlords, provincial rebellions, and the Japanese invasion seriously disrupted the flow of statistics as well. Thus, at best, pre-war output statistics can only be regarded as ball park estimates.

In addition, nation-wide estimates for prices are practically meaningless. Pre-1949 China was essentially made up of many near-subsistence, regionally independent economies centered in district market towns. For a more detailed discussion of regional variation, see: Endymion Porter Wilkerson, Studies in Chinese Price History (New York: Garland Publishing, Inc., 1980).

B/ Because of China's massive size and varied economic structure, price series for the pre-war period are very difficult to draw up. The incomplete series presented here merely serve as indicators of possible price trends and do not reflect average prices for China as a whole. Additional problems encountered during this period include the mixing of volume measures with variable weight equivalents, and the use of both silver (yinliang, 銀兩) and copper (qian, 錢) currency during the pre-1930s period. The money situation in the 1900-1930

period was extremely complex, as both copper cash and silver were used as mediums of exchange. In addition, the two systems were not officially linked to each other, and the weak Qing state was unable to control provincial production of coins or the entrance of coins from Japan or Cochinchine. In general, copper currency was used for small or local purchases, while silver was used for taxes and long-distance commerce. However, since silver was much more plentiful in the South, it was routinely used there for many ordinary transactions as well.

C/ 1949-1982: Until very recently, students of the Chinese agricultural economy had only limited access, both geographically and temporally, to primary statistical data. In the West, much time and effort was expended in the compilation and justification of national-level estimates. Since 1981 and the publication of several Chinese statistical compendia devoted exclusively to agricultural statistics, this situation has dramatically improved. Although not all of the gaps have been filled in, particularly at the provincial level, reasonable Chinese estimates for most data categories are now available. In this table, every effort has been made to use primary Chinese sources rather than Western estimates. However, readers should note that historical biases in the Chinese source material have not as yet been completely unraveled. Periods of particular concern include the Great Leap Forward (1958-1961) and the Cultural Revolution Period (1966-1976). During the Great Leap Forward, the focus of statistical collection moved away from unbiased reporting towards the manipulation and fabrication of numbers as justification for various radical political and economic programs. In 1968, the State organ for statistical collection (SSB) was abolished, and thus, all organized ability to aggregate statistics at the national level abruptly ceased. Communes and some teams and brigades continued to

keep records, but these were not always passed on to higher levels. By 1971 and the conclusion of the phase of popular participation in the Cultural Revolution, the SSB was reorganized. Since then, the Chinese have made concerted efforts to improve and systematize statistical collection.

D/ 1949-1981: This series has been included due to the rough and approximate nature of the "Cultivated Area" series. It should be noted that the Chinese definition of foodgrain includes rice, wheat, corn, millet, sorghum, and other grains as well as soybeans and tubers valued at one-fifth their wet weight.

E/ 1900-1927: Farm-harvest and retail prices are for white polished rice. Data were collected from six market towns in Wuchin Xian in Jiangsu Province. Prices are recorded in silver currency. Gradual devaluation of silver (due to the abandonment of the silver standard in many countries) primarily accounts for the increases in prices between 1900 and 1927. Jiangsu Province is an important rice-growing province in China.

F/ 1911-1940: Rice imports are for net imports, with the exception of the 1911 figure, which is for gross imports.

G/ 1913-1928: Data is an average of Shanghai and Xiaozhan.

H/ 1914-1921: Prior to 1916, 21 provinces reported data. Only Mongolia, Tibet, and Qinghai were not included. After 1916, regular reporting in certain provinces, mostly in south and southwest China (including Yunnan, Guizhou, Sichuan, Guangdong, Guangxi, and Hunan) was curtailed due to the disruptions caused by internal rebellion. By 1921, only six provinces (Henan, Shanxi, Jiangsu, Anhui, Shensi, and Chahar) were still regularly reporting. This accounts for the drop in rice area and production throughout the period.

I/ 1931-1933: Average of nine urban centers throughout China for medium quality rice.

J/ 1931-1937: Data is for Ningxia, Gansu, Shaanxi, Henan, Hubei, Sichuan, Yunnan, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian, and Guangdong Provinces only.

K/ 1937-1947: Data are average prices for grade one rice in Henan Province.

L/ 1937-1943: Farm wage rate represents an average of both busy and off-season wage rates for male and female laborers.

M/ 1938-1946: Data is for Ningxia, Gansu, Shaanxi, Henan, Hubei, Sichuan, Yunnan, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian, Guangdong, Guangxi, and Qinghai Provinces only.

N/ Since China is a centrally planned economy, the pricing structure differs considerably from most other Asian rice economies, where free market conditions prevail. The Chinese government divides agricultural products into categories according to their strategic importance. Crucial products in the major category, including cereals, cotton, and edible vegetable oils, are subject to strict state control and are part of a regular procurement program. Until very recently, these products could not legally be sold or exchanged on the free market. Although peasants may now legally sell surplus crucial products (except cotton) privately, this accounts for only a small percentage of the total commodities marketed and procured. Thus, the publication of farm-gate prices for rice is a recent Chinese phenomenon.

Distinct prices for rice are available at approximately seven stages in the Chinese marketing and procurement system. The basic price is the fixed procurement price (shougou jiage) for quota sales of rice. With the exception

of free-market prices, all other fixed prices use the procurement price as a base. After peasants have fulfilled their quota obligations, they are required to sell additional grain to the state at above quota prices (zhaogu liang jiajia). Above quota prices include a 50 percent premium above the basic quota price. After quota and above quota sales obligations have been fulfilled, farmers may then sell additional grain at a negotiated price (ijia) mutually agreed upon between producers and the state. Usually, this price most closely approximates the free-market price in local rural or urban markets. Procurement and above quota prices are fixed and identical countrywide, while free-market and negotiated prices vary by locale. In addition to farm-gate prices, there are three additional price categories that might loosely be regarded as retail prices. These include rice prices in urban areas under the rationing system, rice prices in rural areas for grain resold to deficit rural areas, and the internal accounting price accorded to rice distributed in kind to commune members. To give readers an idea of the relationship of prices under the Chinese system, a comparative table is furnished below. The data are for 1980.

<u>Price</u>	<u>Rice</u> Yuan/Metric Ton
State procurement price	231.2 (paddy)
Above quota price	346.8 (paddy)
Negotiated purchase price	ca. 546.0 (paddy)
Rural market price	546.0 (milled)
Urban market price	620.0 (milled)
State rationed price for urban areas	212.8 (milled)
State resale price to agricultural areas	249.7 (milled)
Internal accounting price	190.4 (paddy)

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Source: Nicholas Lardy, "China's Agricultural Pricing Policy," World Bank paper, September 1982, p. 8a.

Q/ Although rice is the primary foodgrain in China, wheat and corn are also extremely important. Thus, low apparent availability is in no way an indication of total average foodgrain availability, which in most years would probably be close to triple the rice availability.

P/ 1949-1979: Cultivated area refers to area sown to annual crops. Permanent tree crops and pasture land are not included. The "Cultivated Area" series is obviously a very rough attempt at the estimation of cultivated area. The "Food Grain Sown Area," series (1a), provides a much more realistic appraisal of total area actually in use, although it does not include commercial crops (e.g., oilseeds, cotton) and denotes sown rather than cultivated area. (The multiple cropping index is approximately 150.)

Q/ 1949-1979: Data are for total cultivated area that is irrigated. Although most rice area in China is irrigated, many other crops, such as wheat or cotton, are also frequently irrigated. The 1949-1957 figures are from SSB, Ten Great Years and are still used by the SSB and the Ministry of Water Conservancy. Bruce Stone (IFPRI) constructed the remainder of this series on the basis of five absolute figures (1949, 1973, 1977, 1978 and 1979) issued by the Ministry of Water Conservancy. Other figures were calculated from published percentage increments.

R/ 1949-1980: Data are year-end figures. This series is drawn from official State Statistical Bureau estimates (1949-1951) and from an approximation of an official series created by John Aird of the Foreign Demographic Analysis Division of the U.S. Department of Commerce. A full census of the Chinese population was carried out in midyear 1982 (see Footnote bb).

S/ 1950-1953: Procurement prices reportedly rose by more than one-third between 1950 and the instigation of widespread procurement in 1953. These changes were made to raise the value of agricultural products relative to industrial

products and to account for the increased demand for agricultural products during the recovery period from war and revolution.

T/1952-1981: Procurement prices for grade three rice are an average of indica and japonica varieties. In China, japonica varieties are preferred and command a premium price. Procurement prices for rice have been adjusted upwards nine times between 1949 and 1979. The largest upward adjustments were made in 1961/62 (25 percent) and in 1978 and 1979 (35 percent).

U/1952-1981: Average price for standard grade rice in Beijing. This represents the official price for rice purchased through the urban rationing system. Depending on the particular rice variety marketed, prices vary slightly from region to region.

V/1955-1969: Rice imports include rice destined for re-export. Most of the rice listed as exported to China in partner country statistics was actually sent to a third country as part of a barter scheme. The most notable example of this is China's triangular trade system with Sri Lanka. China buys rice from Burma and re-exports it to Sri Lanka in exchange for rubber. Figures are in calendar years.

W/1957-1980: These figures represent average rural distributed collective income in cash and in kind. They do not, however, include income from private plots, which may account for as much as 20 percent or more of total income. In 1980, if taken into account, this would have raised total rural income to 103.1 yuan/year or .28 yuan/day.

X/1961-1962: Drastic drops in area and output were caused by catastrophic crop failures brought on by a combination of the disruptions of the Great Leap Forward and poor weather conditions.

Y/1966-1977. According to the Agricultural Yearbook of China 1980 (p. 380), procurement prices for rice remained unchanged between 1966 and 1977.

Z/1978-1982: The Chinese rice crop is divided into early, late, single (including intermediate plus single crop late rice), and Northern rice crops. The early rice crop accounts for about 35 percent of total annual production.

aa/1980-1981: Average free-market prices from January-August were collected from a survey of 206 county markets and published in Zhongguo caimao bao (China Finance and Trade Journal).

bb/1982: According to the results of the July 1, 1982 census, China has a total population of 1,031,882,511 persons. This figure includes the population of Taiwan Province.

Sources of Data for Appendix Tables Ia and Ib: China

1. Cultivated Area

1949-1958: China. State Statistical Bureau, Ten Great Years, Occasional Paper No. 5, Program in East Asian Studies (Bellingham, Washington: Western Washington State College, 1974).

1959-1979: Stone, Bruce, "The Use of Agricultural Statistics: Some National Aggregate Examples and Current State of the Art," in R. Barker, R. Sinha, and B. Rose, eds., The Chinese Agricultural Economy (Boulder, Colorado: Westview, 1982), pp. 222-223; 1960-1964, 1966-1969, 1971-1974, and 1976 figures are reconstructed by Bruce Stone based on recent data from China. 1981 Zhongguo jingji nianjian (Almanac of China's Economy 1981) (Beijing: Jingji Guanli Zazhishe, 1981), p. VI-9.

1a. Foodgrain Sown Area (including soybeans)

1949-1979: China. Zhongguo nongye nianjian 1980 (Agricultural Yearbook of China 1980) (Beijing: Nongye Chubanshe, 1981).

1980-1981: Zhongguo Tongji Chubanshe, Zhongguo tongji nianjian (Statistical Yearbook of China) (Beijing: 1981).

## 2. Rice Production

1914-1921: China. Nongshangbu, Tongjike, Nongshang tongji biao (Yearbook of Agriculture and Commerce Statistics) (Nanjing).

1931-1946: Zhongguo Nongmin Yinhang (Farmer's Bank of China), Jingji Yanjiu Chu (Department of Economic Research), Zhongnong jingji tongji, Economic and Statistical Review, added English title, Vols. 2-7 (Nanjing: 1941-1947).

1949-1957: China. State Statistical Bureau, Ten Great Years, Occasional Paper No. 5, Program in East Asian Studies (Bellingham, Washington: Western Washington State College, 1974).

1958-1977: China. Zhongguo nongye nianjian 1980 (Agricultural Yearbook of China 1980) (Beijing: Nongye Chubanshe, 1981).

1978-1981: China. Zhongguo Tongji Chubanshe, Zhongguo tongji nianjian (Statistical Yearbook of China) (Beijing: 1981).

1982: Beijing Review, Vol. 26, No. 19, May 9, 1983.

## 3. Rice Area

1914-1921: China. Nongshangbu, Tongjike, Nongshang tongji biao (Yearbook of Agriculture and Commerce Statistics) (Nanjing).

1931-1946: Zhongguo Nongmin Yinhang (Farmer's Bank of China), Jingji Yanjiu Chu (Department of Economic Research), Zhongnong jingji tongji, Economic and Statistical Review, added English title, Vols. 2-7 (Nanking, 1941-1947).

1947-1957: China. State Statistical Bureau, Ten Great Years, Occasional Paper No. 5, Program in East Asian Studies (Bellingham, Washington: Western Washington State College, 1974).

1958-1981: China. Zhongguo Tongji Chubanshe, Zhongguo tongji nianjian (Statistical Yearbook of China) (Beijing: 1981).

4. Rice Yields

1914-1981: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Area Irrigated

1949-1957: China. State Statistical Bureau, Ten Great Years, Occasional Paper No. 5, Program in East Asian Studies (Bellingham, Washington: Western Washington State College, 1974).

1958-1979: Stone, Bruce, "The Use of Agricultural Statistics: Some National Aggregate Examples and Current State of the Art," in R. Barker, R. Sinha, and B. Rose, eds., The Chinese Agricultural Economy (Boulder, Colorado: Westview, 1982), pp. 226-227.

6. Rice Imports

1911-1940: Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford University, California: Food Policy Research Institute, 1941).

1955-1969: Kirby, Riley, "Agricultural Trade of the People's Republic of China, 1935-69," Foreign Agricultural Economic Report 83 (Washington, D.C.: USDA, 1972).

1970-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

7. Rice Exports

1950-1980: China. Zhongguo jingji nianjian 1982 (Chinese Economic Yearbook of 1982) (Beijing: Jingji Guanli Zazhishe, 1981), p. VI-9.

1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1949-1980: Stone, Bruce, "The Use of Agricultural Statistics: Some National Aggregate Examples and Current State of the Art," in R. Barker, R. Sinha, and B. Rose, eds., The Chinese Agricultural Economy (Boulder, Colorado: Westview Press, 1982), pp. 210-211.

1981: China. Zhongguo Tongji Chubanshe, Zhongguo tongji nianjian (Statistical Yearbook of China) (Beijing: 1981).

1982: Beijing Review, Vol. 25, No. 45, November, 1982, p. 5.

9. Farm-Harvest Price

1900-1926: Chang, L. L., "Farm Prices in Wuchin, Kiangsu, China," Booklet Series No. 19 (Shanghai: Bureau of Foreign Trade, 1932).

1980-1981: Data collected and aggregated from Chinese journal Zhongguo caimao bao (Chinese Finance and Trade Journal) by Dr. Terry Sicular, University of Wisconsin.

10. Procurement Price

1952-1979: China. Zhongguo nongye nianjian 1980 (Agricultural Yearbook of China 1980) (Beijing: Nongye Chubanshe, 1980), pp. 380-382.

1980-1981: Lardy, Nicholas, "China's Agricultural Pricing Policy," World Bank, September 1982, p. 38.

11. Average Wholesale Rice Price

1913-1928: Nankai University, Nankai University Committee on Social and Economic Research, Wholesale Prices and Price Index Numbers in North China 1913-1929, Price Series Bulletin No. 1 (Tientsin, China: China Press, Ltd., 1929).

1931-1933: China. Ministry of Industries, Bureau of Statistics, Monthly Price Statistics (Nanjing: 1934-1935).

12. Official Retail Rice Price

1910-1927: Chang, L. L., "Farm Prices in Wuchin, Kiangsu, China," Booklet Series No. 19 (Shanghai: Bureau of Foreign Trade, 1932).

1937-1947: Zhongguo Nongmin Yinhang (Farmer's Bank of China), Jingji Yanjiu Chu (Department of Economic Research), Zhongnong jingji tongji, Economic and Statistical Review, added English title, Vols. 2-7 (Nanking: 1941-1947).

1953-1973: Wong, Tong-eng, Economic Policies and Price Stability in China, Institute of East Asian Studies, China Research Monograph No. 16 (Berkeley: University of California, 1980), p. 13.

1952, 1979, 1981: Lardy, Nicholas, "China's Agricultural Pricing Policy," World Bank, September 1982, p. 38.

13. Farm Wage Rate

1937-1943: Zhongguo Nongmin Yinhang (Farmer's Bank of China), Jingji Yanjiu Chu (Department of Economic Research), Zhongnong jingji tongji, Economic and Statistical Review, added English title, Vols. 2-7 (Nanking: 1941-1947).

1957-1979: State Statistical Bureau.

1980: Beijing Review, No. 20, May 18, 1981, p. 19.

14. Domestic Apparent Per Capita Paddy Availability

1949-1982: Paddy availability is calculated by dividing paddy production (2) by population (8) on an annual basis.

15. Early Rice Area

1978-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, Grains, FG-4-84 (Washington, D.C.: Jan. 17, 1984), p. 12.

16. Early Rice Production

1978-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, Grains, FG-4-84 (Washington, D.C.: Jan. 17, 1984), p. 12.

17. Early Rice Yields

1978-1982: Early rice yields are calculated by dividing early rice production (16) by early rice area (15) on an annual basis.

Country Sources of Basic Data<sup>\*</sup>: China

1. China. State Statistical Bureau, Ten Great Years, Occasional Paper No. 5, Program in East Asian Studies (Bellingham, Washington: Western Washington State College, 1974). This is a translation of the original Chinese text.
2. U.S. Department of Agriculture, Economics, Statistics and Cooperative Service, Agricultural Situation - Review of 1979 and Outlook for 1980 - People's Republic of China, Supplement 6 to WAS-21 (Washington, D.C.: 1979). This is a yearly publication. This particular year is recommended because long-term output and area series are included.
3. Buck, John Lossing, Land Utilization in China, Vol. 1, a classic for pre-communist China, describes the topography, climate, soils, population, crops, labor, prices, marketing, and consumption in China. Volume 2 is an atlas of the areas covered in Buck's study. Volume 3 contains the statistics collected during this study and some statistical analysis.

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\* Several Western sources in English have been included because of the lack of translated material and because many important Chinese sources are not easily available overseas.

4. Zhongguo Nongmin Yinhang (Farmer's Bank of China), Jingji Yanjiu Chu (Department of Economic Research), Zhongnong jingji tongji, Economic and Statistical Review added English title (Nanking).
5. Ministry of Industries, The National Agricultural Research Bureau, Division of Agricultural Economics, Nongqing baogao (Crop Reports) (Nanjing: 1930s). (Monthly).
6. Ministry of Agriculture and Commerce, Nongshang tongji biao (Yearbook of Agriculture and Commerce Statistics (Nanjing: 1916-1924). An important early Republican period source.
7. Zhongguo Kexue Yuan, Dili Yanjiu Suo, Jingji Dili Yanjiushi, Zhongguo nongye dili zonglun (General Treatise on the Agricultural Geography of China) (Beijing: Kexue Chubanshe, 1980).
8. Zhongguo caimao bao (Chinese Finance and Trade Journal). A recent journal published three times a week.
9. Shi chang (Marketing). Published weekly since 1979 by People's Daily.
10. Zhongguo jingji nianjian 1982 (Chinese Economic Yearbook of 1982) (Beijing: Jingji Guanli Zazhishe, 1982). (Annual).
11. Zhongguo nongye nianjian 1980 (Agricultural Yearbook of China 1980) (Beijing: Nongye Chubanshe, 1981). (Annual).
12. Zhongguo tongji nianjian 1981 (Statistical Yearbook of China) (Beijing: Zhongguo Tongji Chubanshe, 1981).

#### Some Important Translation Sources in English

1. Beijing Review (Beijing). A Chinese weekly of general news and political outlooks in English. Quite frequently, articles containing official figures on the Chinese agricultural economy are published.

2. Foreign Broadcast Information Service, Daily Report: China (FBIS). A U.S. daily translation service for Chinese radio and news broadcasts. Available in paper and on microfiche in most libraries.
3. U.S. Joint Publications Research Service (JPRS) China. A translation service for important Chinese magazines, books, newspapers, and periodicals. Formerly published as a single series, it is now divided according to topic. Pertinent areas include: China Report - Agriculture; China Report - Economic Affairs; and China Report - Political, Sociological and Military Affairs.
4. Summary of World Broadcasts (SWB). A British daily translation service with material somewhat similar to that of FBIS.
5. China Reconstructs. A monthly Chinese magazine containing articles of general interest.
6. Far Eastern Economic Review. A weekly news magazine for all of Asia. Contains many important articles on China.

#### Useful Secondary Sources

1. Sinha, Radha, "Chinese Agriculture: A Quantitative Look," The Journal of Development Studies, Volume 2, No. 3, April 1975, pp. 201-223.
2. Chander, R., "China: Statistical System and Basic Data," February 1981, World Bank Mimeo.
3. Li, Choh-ming, The Statistical System of Communist China (Berkeley: University of California Press, 1962).
4. Barker, R., Sinha, R., and Rose, B., eds., The Chinese Agricultural Economy (Boulder, Colorado: Westview, 1982). See especially Chapter 11, Barker, R., Sisler, D., and Rose, B., "Prospects for Growth in Grain Production in China," and Stone, B., "Appendix A: The Use of Agricultural Statistics: Some National Aggregate Examples and Current State of the Art."

An Annotated Bibliography of Western Compilations of  
Chinese Agricultural Statistics with Special Reference to  
Province-Level Statistics

1. Walker, Kenneth, "Provincial Grain Output in China 1952-57: A Statistical Compilation," Research Notes and Studies No. 3 (London: Contemporary China Institute, School of Oriental and African Studies, University of London, 1977).  
  
Provides a well documented series for grain and soybean output by province between 1952-1957. Walker has made an attempt to reconcile different Chinese sources and systematize data definition and coverage.
  
2. Liu, Twanmo, Yeh, Production of Food Crops on the Chinese Mainland: Prewar and Postwar (Santa Monica: Rand Corporation, 1964).  
  
Although this monograph provides some interesting estimates for food-grain output based on the authors' research, especially for the pre-1949 period based on Buck's data, it is somewhat politically slanted. The stated intent of the monograph is to disprove Chinese claims of substantial foodgrain output increases between the 1930s and the 1949-1959 period.
  
3. Buck, John Lossing, Land Utilization in China (Nanking: University of Nanking, 1937).  
  
This book, a classic in the field, is the result of an extensive survey carried out in the 1930s by Buck. The book includes not only detailed statistical output for food crops, but also extensive documentation and analysis of climate, soils, livestock, crops, labor, markets, population, and nutrition for pre-communist China. The data are frequently used as a benchmark against which scholars compare post-liberation progress. Buck

breaks China down into broad agricultural regions according to climate and crops.

4. Chen, Nai-ruenn, Chinese Economic Statistics (Chicago: Aldine Publishing Company, 1967).

Chen's book is not strictly limited to agricultural data. It contains substantial sections on industry, transport, population, and other critical sectors. Although the book is somewhat dated and rather disorganized, it does, however, contain many useful sections.

5. Office of Economic Research, Directorate of Intelligence, CIA, Agricultural Acreage in Communist China, 1949-1968: A Statistical Compilation (1969).

This small publication is a rich source of extensive agricultural area figures for the period pre-1949-1968 gleaned from official reports. Some area data are reported for all grain and commercial crops and green manure area, as well as cropping indexes, and total cultivated area nationally and by province. Unfortunately, the sources are not acknowledged, although the authors have obviously made an extensive review of available official sources.

6. Provincial Agricultural Statistics for Communist China (Ithaca, New York: Committee on the Economy of China, Social Science Research Council, 1969).

Authors of this monograph combed many Chinese journals, newspapers, and other sources to draw up tables by province for the 1949-1959 period. No attempt is made to estimate missing cells, and all numbers are clearly documented. Data include cultivated and irrigated area, sown area, output, and yield by crop for foodgrains, rice, wheat, tubers, coarse grains, soybeans, and cotton. The authors make no attempt to assess the relative quality of the data. Useful for the pre-Great Leap Period.

7. Stone, Bruce, "The Use of Agricultural Statistics: Some National Aggregate Examples and Current State of the Art," in Barker, R., Sinha, R., and Rose, B., eds., The Chinese Agricultural Economy (Boulder, Colorado: Westview, 1982), pp. 205-246.  
Stone's chapter includes national-level statistical series for many aspects of agriculture, including grains, livestock, population, fertilizers, agricultural machinery, and irrigated area. The author has collected major statistical series for each area of interest, including official statistics. A critique of each series and a description of how the official system functions, including its pitfalls, accompanies the discussion of each area.
8. Wiens, Thomas, "Agricultural Statistics in the People's Republic of China," in Alexander Eckstein, ed., Quantitative Measure of China's Economic Output (Ann Arbor: University of Michigan Press, 1980), pp. 44-107.  
Wiens' chapter, in a larger volume dealing with all of China's economic output, is yet another attempt to assess the relative quality of Chinese agricultural statistics during 1949-1957 and 1958-1975. The author also critiques some of the other important Western series and presents some adjusted and improved series of his own.
9. CIA, National Foreign Assessment Center (NFAC).  
The NFAC issues periodic research reports on various aspects of the Chinese economy. Like the USDA, the NFAC collects yearly production, area, and yield figures. NFAC has access to raw data similar to that used by USDA researchers so that the estimates from these two sources seldom differ markedly.
10. USDA, Economics and Statistics Service, Agricultural Statistics: People's Republic of China Review of 1981 and Outlook for 1982, Supplement 6 to

WAS-27 (Washington, D.C.) and other years.

This publication is issued annually. It presents an overall synopsis of Chinese agriculture concentrating on the current crop year as well as USDA estimates for grain production and area. Recently, USDA researchers have come to accept SSB figures for total grain output. Thus, vast discrepancies exist between 1976-1980 and pre-1976 figures. This constitutes a serious limitation in the use of current USDA data. On the other hand, it does present a very useful general review of agricultural policy. Recommended as an introduction.

11. Tuan, Francis, "PRC Provincial Total Grain Production," Research Notes on Chinese Agriculture: No. 2 (Washington, D.C.: People's Republic of China Section, Economics and Statistics Service, USDA, 1981).

In this publication, a variety of Chinese sources are used to reconstruct and compile China's provincial total grain production figures for 1969-1979. Compiling procedures and implications of the estimated results are briefly explained. Sources for all estimates are provided.

#### Important Conversion Factors

##### Money Unit

Prior to 1930s - silver cash (tael) - yinliang (銀兩) and copper cash - qian (錢).

Post-World War II - yuan

In 1980 1 US\$ = 1.53 yuan official exchange rate

1 li (里)	=	500m.	=	0.3107 mi.
1 mu or mou (亩)	=	0.667 ha.	=	0.1647 acres
15 mu (亩)	=	1.0 ha.	=	2.4711 acres

1 sheng (升) rice =	1 litre rice	= 0.5 kg. rice	<u>Volume Measures</u>
1 dou (斗) rice =	10 litres rice	= 5 kg. rice	
1 dan or picul (石) rice =	100 litres rice	= 50 kg. rice	
20 piculs (dan) =	1 mt.		
1 jin or catty (斤) =	0.5 kg.	= 1.1023 lbs.	<u>Weight Measures</u>
1 dan (担) =	50 kg.	= 110.23 lbs.	
1 dun (亩) =	1 mt.	= 2204.6 lbs.	
1 jin/mu =	7.5 kg./ha.		

Administrative Divisions

<u>English</u>	<u>Chinese</u>
Province	Sheng (省)
Autonomous Region	Zezhichu (自治区)
Municipality	Shi (市)
Prefecture	Diqu (地区)
County	Xian (县)
Township *	*Xiang (乡)

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\* The administrative range of the xiang (which consisted of a market town and surrounding small satellite villages) was largely subsumed by the creation of the commune in the 1950s. However, with the popularization of the "responsibility system" and the downgrading of responsibilities delegated at the communal level, the xiang is again becoming an important administrative unit.

Chronology of Recent Events

1912	Sun Yat-sen; Republican China
1921	Founding First Congress of the Chinese Communist Party (CCP)
1928-1937	Warlord period; Guomindang nationalists led by Jiang Jieshi
1934-1935	Communist Long March to Shaanxi Province
1937-1945	Japanese aggression against China
1946-1949	Civil War
1949	Founding of the People's Republic of China
1950-1953	Land reform
1950-1960	Period of Soviet aid
1956-1957	"Let a hundred flowers bloom"
1958-1961	Great Leap Forward
1966-1976	Cultural Revolution Period
1972	Nixon visits China
1976	Zhou Enlai and Mao Zedong die; arrest of "Gang of Four"
1977	"Four modernizations" program
1978	New agricultural policies announced
1979	Sino-Vietnamese War; diplomatic relations established with United States; "responsibility systems" initiated
1981	Trial of "Gang of Four" concludes; United States grants China most favored nation status

## II. TAIWAN PROVINCE

### Rice Statistics in Taiwan Province

Current Taiwanese agricultural statistical reporting is, in general, very comprehensive. This is both because of the methodical data collection system initiated on Taiwan by the Japanese prior to 1945 and because of the capacity for developed statistical collection that the Nationalists brought with them from China. The statistical system of Taiwan Province is organized along the same lines as the Chinese system. The Bureau of Statistics, headed by the Director-General of Budget Accounts and Statistics, is the central body around which all statistical collection is organized. This bureau is responsible for carrying out island-wide agricultural and population censuses every five years. The Bureau of Statistics also publishes regular statistical reports, such as the annual Statistical Yearbook of Taiwan, based on material gathered by the specialized ministries. The bureau generally oversees statistical collection at all levels of the bureaucracy, although it is not responsible for actual collection of any statistical data except for census material.

The Provincial Food Bureau (PFB) is responsible for the collection and compilation of rice statistics, and the PFB publishes these statistics in its annual yearbook, Taiwan Food Statistics Book. Cultivated and sown areas are determined through visual estimation for each township. Rice area is always reported on a sown area basis and further subdivided by first and second season crop. Although both planted and harvested areas for rice are determined, only planted area was reported in statistical publications until 1977 when it was replaced by harvested area. Rice is reported in hectares, rice production in metric tons of brown (husked) rice (1 kg. paddy = 0.76 kg. brown rice). Prior to 1945, the volume measure hectoliters was used. Yields were reported

in kilograms of brown rice per hectare. Crop cutting is used to determine total output and average yields. Fields are chosen at random and samples are harvested from five points in each field.

Rice area, production, and yield statistics are available at hsien and township levels as well as for all of Taiwan Province. Data are subdivided into wet or upland area. However, less than one percent of the total rice crop is grown under upland conditions. Paddy rice statistics are further subdivided by rice type. These include ponlai rice (蓬萊米), non-glutinous chailai rice (佳來米), long grain indica rice (長秈米), round glutinous rice (圓糯米), and oval glutinous rice (長糯米). In 1978, almost 80 percent of the total rice crop was of the ponlai type, although Taiwan is also an important world producer of glutinous rice used in the brewing industry and in the preparation of sweets and specialty foods.

TABLE IIa

TAIWAN PROVINCE	Cultivated area '000' ha	Rice production brown rice '000' mt	Rice area planted '000' ha	Rice yield brown rice mt/ha	Area irrig. and drained '000' ha
Year	1	2	3	4	5
1900	347(A)	307(B)	326	0.94	
1901	376	438	353	1.24	
1902	437	403	345	1.17	
1903	534	525	395	1.33	150(F)
1904	625	594	435	1.37	192
1905	625	622	447	1.39	194
1906	634	567	459	1.24	200
1907	654	645	472	1.37	219
1908	650	665	479	1.39	217
1909	662	661	479	1.38	227
1910	674	598	456	1.31	227
1911	687	642	479	1.34	232
1912	690	578	481	1.20	234
1913	691	732	494	1.48	233
1914	693	658	500	1.32	237
1915	700	684	491	1.39	242
1916	716	664	472	1.41	247
1917	721	691	466	1.48	262
1918	732	662	483	1.37	278
1919	738	703	497	1.41	302
1920	749	692	500	1.38	305
1921	753	711	495	1.44	311
1922	751(J)	778	511	1.52	315
1923	752	695	508	1.37	327
1924	762	868	531	1.63	333
1925	776	920	551	1.67	350
1926	790	888	567	1.57	371
1927	797	986	585	1.69	379
1928	804	971	585	1.66	388
1929	805	926	568	1.63	438
1930	808	1053	614	1.71	441
1931	810	1069	634	1.69	450
1932	814	1278	664	1.92	450
1933	820	1195	675	1.77	457
1934	826	1298	667	1.95	461
1935	831	1303	679	1.92	465
1936	846	1365	682	2.00	486
1937	857	1319	658	2.00	511
1938	858	1402	625	2.24	527
1939	860	1307	626	2.09	524

TABLE IIa (cont'd)

TAIWAN PROVINCE	Rice imports milled '000' mt	Rice exports milled '000' mt	Population year-end '000' persons	Farm-harvest price brown rice yuan/mt
Year	6	7	8	9
1900	2	43	2846(C)	
1901	8	35	2931	40(D)
1902	10	55	3005	50
1903	16	76	3030	58
1904	16	81	3080	40
1905	8	91	3123	46
1906	4	107	3157	57
1907	10	79	3186	77
1908	4	146	3214	58
1909	5	138	3250	52
1910	6	95	3299	60
1911	12	85	3369	79
1912	17	83	3435	94
1913	27	144	3502	89
1914	10	77	3554	67
1915	9	113	3570	55
1916	11	428	3596	64
1917	16	105	3647	94
1918	44	140	3670	141
1919	50	151	3715	188
1920	23	91	3758	158
1921	18	131	3836	124
1922	44(K)	96	3905	104
1923	14	160	3976	123
1924	17	235	4042	151
1925	110	304	4147	177
1926	63	310	4242	162
1927	121	371	4337	133
1928	43	299	4438	138
1929	86	288	4549	138
1930	13	270	4679	102
1931	2	357(N)	4804	80
1932	34	448	4930	106
1933	7	554	5061	105
1934	11	678	5195	127
1935	1	603	5316	151
1936	1	643	5452	157
1937	1	650	5609	158
1938	2	655	5747	170
1939	1	551	5896	185

TABLE IIa (cont'd)

TAIWAN PROVINCE	Official purchase price paddy yuan/mt	Wholesale price brown rice main market Taipei yuan/mt	Retail rice price main market Taipei yuan/mt	Farm wage rate yuan/day
Year	10	11	12	13
1900	-			
1901	-			
1902	-			
1903	-			0.40(G)
1904	-			0.30
1905	-	56(H)	66(I)	0.35
1906	-	66	77	0.40
1907	-	81	97	0.40
1908	-	65	76	0.40
1909	-	58	68	0.40
1910	-	67	81	0.40
1911	-	86	111	0.40
1912	-	107	126	0.60
1913	-	99	117	0.50
1914	-	76	96	0.50
1915	-	61	74	0.50
1916	-	70	83	0.50
1917	-	100	120	0.50
1918	-	146	174	0.80
1919	-	192	227	1.80
1920	-	168	203	1.60
1921	-	124	154	1.00
1922	-	122	162	1.00
1923	-	123	153	0.77
1924	-	152	186	0.80
1925	-	175	206	0.90
1926	-	162	198	1.00
1927	-	131	173	1.20
1928	-	145(L)	172	1.25
1929	-	151	198(M)	1.50
1930	-	129	173	1.20
1931	-	89	117	
1932	-	120	135	1.20
1933	-	102	137	1.20
1934	-	128	153	1.20
1935	-	158	188	1.48
1936	-	166	198	1.40
1937	-	171	198	1.10
1938	-	174	203	1.15
1939	-	199	230	1.80

TABLE IIa (cont'd)

TAIWAN PROVINCE	Domestic apparent per capita availability brown rice-kg/cap/yr	First crop rice area planted '000' ha	First crop rice prod'n brown rice '000' mt	First crop rice yield brown rice '000' mt	Cultivated ha/person
Year	14	15	16	17	18
1900	108				.12
1901	149	178(E)	279(E)	1.57(E)	.13
1902	134	163	222	1.36	.14
1903	173	192	280	1.46	.18
1904	193	198	303	1.53	.20
1905	199	210	326	1.55	.20
1906	180	215	302	1.40	.20
1907	202	217	294	1.35	.20
1908	207	226	324	1.43	.20
1909	203	224	342	1.53	.20
1910	181	213	301	1.41	.20
1911	191	218	344	1.58	.20
1912	168	218	300	1.38	.20
1913	209	224	370	1.65	.20
1914	185	224	285	1.27	.19
1915	192	224	325	1.45	.20
1916	185	215	354	1.65	.20
1917	189	211	351	1.66	.20
1918	180	213	345	1.62	.20
1919	189	225	344	1.53	.20
1920	184	223	339	1.52	.20
1921	185	220	358	1.63	.20
1922	199	228	391	1.71	.19
1923	175	225	371	1.65	.19
1924	215	235	426	1.81	.19
1925	222	242	453	1.87	.19
1926	209	250	405	1.62	.19
1927	227	258	465	1.80	.18
1928	219	261	457	1.75	.18
1929	204	233	408	1.75	.18
1930	225	267	498	1.87	.17
1931	223	274	518	1.89	.17
1932	259	283	603	2.13	.16
1933	236	286	563	1.97	.16
1934	250	288	644	2.24	.16
1935	245	297	618	2.08	.16
1936	250	302	677	2.24	.15
1937	235	295	630	2.14	.15
1938	244	282	698	2.48	.15
1939	222	267	576	2.16	.14

TABLE IIb

TAIWAN PROVINCE	Cultivated area '000' ha	Rice prod'n brown rice '000' mt	Rice area planted '000' ha	Rice yield brown rice mt/ha
Year	1	2	3	4
1940	860	1129	639	1.77
1941	859	1199	647	1.85
1942	854	1171	617	1.90
1943	847	1126	610	1.85
1944	808	1068	601	1.78
1945	816	639	502	1.27
1946	832	894	564	1.59
1947	834	999	678	1.47
1948	863	1068	718	1.49
1949	865	1215	748	1.62
1950	871	1421	770	1.85
1951	874	1485	789	1.88
1952	876	1570	786	2.00
1953	873	1642	778	2.11
1954	874	1695	777	2.18
1955	873	1615	751	2.15
1956	876	1790	784	2.28
1957	873	1839	783	2.35
1958	883	1894	778	2.43
1959	878	1856	776	2.39
1960	869	1912	766	2.50
1961	872	2016	783	2.57
1962	872	2113	794	2.66
1963	872	2109	749	2.82
1964	882	2247	765	2.94
1965	890	2348	773	3.04
1966	896	2380	789	3.02
1967	902	2414	787	3.07
1968	900	2518	790	3.19
1969	915	2322	787	2.95
1970	905	2463	776	3.17
1971	903	2314	753	3.07
1972	899	2440	742	3.29
1973	896	2255	724	3.11
1974	917	2452	778	3.15
1975	917	2494	790	3.16
1976	920	2713	786(BB)	3.44
1977	923	2649	778	3.40
1978	918	2444	752	3.25
1979	915	2450	721	3.39
1980	907	2354	637	3.70
1981	900	2375	667	3.56
1982	891	2483	659	3.76

TABLE IIb (cont'd)

TAIWAN PROVINCE	Area irrigated and drained '000' ha	Rice imports milled '000' mt	Rice exports milled '000' mt	Population year-end million persons
Year	5	6	7	8
1940	530	12	397	6077
1941	543	13	268	6249
1942	545	3	259	6428
1943	547(P)	-	247	6586
1944	540	-	159	
1945	520(Q)	-	18	
1946	498(R)	-	2	6091(S)
1947	483	-	40	6495
1948	503	-	30	6806
1949	504	60	36	7397
1950	508	1	73	7554
1951	495	-	70	7869
1952	474	5	105	8128
1953	497	-	84	8438
1954	473	-	84	8749
1955	476	-	157	9078
1956	490	-	107	9390
1957	491	-	247	9690
1958	496	-	171	10039
1959	483	(W)	(W)	10431
1960	502	30	88	10792
1961	469	104	45	11149
1962	495	13	88	11512
1963	528	2	37	11884
1964	532	23	175	12257
1965	532	2	221	12628
1966	536	-	224	12993
1967	543	4	208	13297
1968	551	4	90	13650
1969	535	5	50	14335(Y)
1970	535	4	48	14678
1971	496	7	5	14994
1972	563	6	78(Z)	15289
1973	565	3	26	15565
1974	487	133	75	15852
1975	533	18	5	16150
1976	473	4	1	16508
1977	447	9	5	16813
1978		6	307	17136
1979		-	248	17479
1980		-	476	17805
1981		13	86	18136
1982		-	550	18458

TABLE I Ib (cont'd)

TAIWAN PROVINCE	Farm-harvest price paddy NT\$/mt	Official purchase price paddy NT\$/mt	Wholesale price brown rice main market Taipei NT\$/mt	Retail rice price main market Taipei NT\$/mt	Farm wage rate NT\$/day
Year	9	10	11	12	13
1940	189	-	203	242	2.10
1941	205	-	221	258	2.20
1942	212	(0)	233	272	2.20
1943	228		238	278	
1944	299		251	293	
1945	794		1688	2050	
1946			20968	24520	
1947		31000(T)	61373	71780	
1948		214350	207577	242780	
1949	(U)	240(U)	300(U)	340(U)	(U)
1950		560	1104	1250	
1951	600	750	1175	1330	
1952	1100	985	1806	2070	
1953	1700	1460	2857	3290	
1954	1500	1460	2511	2920	
1955	1500	1530	2702	3150	
1956	1700	1600	2910	3370	
1957	1800	1685	3105	3640	
1958	2457(V)	1800	3182	3690	
1959	3093	1920	3655	3970	
1960	4189	2565	4883	5500	
1961	3933	2830	5204	5890	
1962	3785	2905	4963	5830	
1963	3996	2965	5040	5920	
1964	4092	3040	5214	5960	
1965	4128	3105	5318	6030	
1966	4150	3220	5368	6120	45.00(X)
1967	4390	3410	5694	6410	50.00
1968	4630	3655	5938	6850	65.00
1969	4530	3815	5940	7050	80.00
1970	4720	4065	6400	7330	71.00
1971	4650	4285	6205	7610	70.00
1972	4930	4495	6619	8120	77.00
1973	5690	6225(AA)	7553	9140	101.00
1974	10200	10750	13324	17030	186.00
1975	11080	11500	14545	18010	200.00
1976	10620	11500	13857	17900	230.00
1977	8900	11500	12120	16200	268.00
1978	9080	11500	12420	16700	311.00
1979	10980	13250	14780	19600	
1980	13400	15550	20880(CC)		
1981			21550		
1982			23790		

TABLE IIb (cont'd)

TAIWAN PROVINCE	Domestic apparent per capita availability brown rice kg/cap/yr	First crop rice area planted '000' ha	First crop rice prod'n brown rice '000' mt	First crop rice yield brown rice mt/ha	Cultivated ha/person
Year	14	15	16	17	18
1940	186	278	603	2.17	.14
1941	192	293	598	2.04	.14
1942	182	268	548	2.04	.13
1943	171	272	546	2.01	.13
1944		269	555	2.06	-
1945		232	342	1.47	-
1946	147	205	383	1.87	.14
1947	154	287	471	1.64	.13
1948	157	312	514	1.65	.13
1949	164	320	577	1.80	.12
1950	188	337	678	2.01	.11
1951	189	347	716	2.06	.11
1952	193	349	757	2.17	.11
1953	195	344	740	2.15	.10
1954	194	354	836	2.36	.10
1955	178	306	711	2.32	.10
1956	191	339	907	2.68	.09
1957	189	346	932	2.69	.09
1958	189	344	934	2.72	.09
1959	178	341	930	2.73	.08
1960	177	331	901	2.72	.08
1961	181	339	982	2.90	.08
1962	184	343	1057	3.08	.07
1963	177	315	1016	3.23	.07
1964	183	332	1102	3.32	.07
1965	186	330	1127	3.42	.07
1966	183	340	1103	3.24	.07
1967	182	337	1153	3.42	.07
1968	184	340	1220	3.59	.06
1969	162	342	1239	3.62	.06
1970	168	341	1280	3.75	.06
1971	154	334	1259	3.77	.06
1972	160	330	1213	3.68	.06
1973	145	324	1122	3.46	.06
1974	155	345	1291	3.74	.06
1975	154	358	1323	3.70	.06
1976	164	362	1408	3.89	.05
1977	158	359(BB)	1382	3.85	.05
1978	143	352	1356	3.85	.05
1979	140	339	1277	3.77	.05
1980	132				
1981	131				
1982	135				

Notes to Appendix Tables IIa and IIb: Taiwan Province

A/1900-1982: Figures refer to cultivated land area, which includes dry land and all types of paddy land.

B/1900-1982: Production figures recorded in brown rice.

C/1900-1982: Population is for Dec. 31 of each calendar year. In the pre-war period, population includes Japanese, Taiwanese, aborigines, and foreigners.

D/1901-1945: Farm-harvest price is calculated on a metric ton basis from the total gross value of the rice crop in yuan, including first and second crop, in brown rice. The column in the original source, labeled "value" (chia chih 價值) is taken to mean value of the rice crop for farmers, and thus is used to calculate an average farm-harvest price. However, it is unclear how the "value" column was tabulated in the original source, so that "value" may indicate a wholesale, rather than farm-gate value.

E/1901-1979: Data obtained from Provincial Food Bureau. "First crop" refers to rice planted between January 1 and April 30 and harvested within that calendar year. "Second crop" refers to rice planted between May 1 and September 30 and harvested within that calendar year. The second crop occupies a larger area than the first crop, but yields are, on average, much lower. First and second crop include wet and dry land rice culture although wet land, or paddy rice culture, accounts for the majority of total rice area. Production figures recorded in brown rice.

F/1903-1945: Irrigated area numbers refer to total cultivated area irrigated and drained by man-made means for all crops. Rice was grown on

most of the irrigated area, but some sugar cane was also irrigated. Irrigated area figures include all cultivated areas with irrigation and drainage facilities controlled by the irrigation associations, and all cultivated area under small-scale private irrigation systems. Although total irrigated area has risen steadily, with the clear exception of the period 1943-1945, the relative portion of land devoted to public and private irrigation systems has changed drastically. In 1903, 26 percent of total irrigated area was under public control, while 74 percent was under private systems. Area under public control rose rapidly and steadily while area under private control declined, both as a percent of total, and numerically. By 1945, private irrigated area had shrunk to only one percent of total irrigated area. Figures supplied by the Water Conservancy Bureau.

G/ 1903-1942: Male paddy worker wage rate for Taipei. Female wage rates are available for selected years. The disparity between male and female wage rates is large--usually, on average, women made half or less than their male counterparts. For example, in 1932 the average male wage rate was 1.2 yuan per day, while the average female wage rate was 0.5 yuan. Paddy worker wage rate series are also available for Taichung and Tainan. Wage rates for Taichung and Tainan tend to be lower than those for Taipei, with less disparity between male and female wage rates.

H/ 1905-1927: Wholesale main market (Taipei City) brown rice price for chailai rice (在來米). Chailai rice includes an amalgam of all the indigenous indica rice varieties grown in Taiwan until the introduction of "ponlai rice" (蓬萊米) in 1926.

I/ 1905-1928: Retail main-market (Taipei City) polished rice price is for chailai rice, the predominant native varieties used until the introduction

and popularization of japonica X native crosses (ponlai rice) by the Japanese in the late 1920s.

J/ 1922-1982: Based on data supplied by the Provincial Department of Agriculture and Forestry.

K/ 1922-1980: Rice imports recorded in brown rice and changed to milled rice at the ponlai rate of .94.

L/ 1928-1979: Wholesale main market (Taipei City) brown rice price for ponlai rice (蓬萊米) is continuous with the preceding chailai series. In 1926, the Japanese introduced ponlai rice, which is a cross between native varieties and Japanese japonica varieties. Ponlai rice, inherently much more productive than native varieties, although it requires increased use of inputs, rapidly came to dominate rice area in Taiwan. This was both because of Japanese consumer preference for this type, and because of the relative profitability of ponlai types. Today, almost all rice area is planted to ponlai varieties. In the marketplace, ponlai rice costs a little more than chailai rice. For example, in 1939 in Taipei, ponlai rice cost 199 yuan/mt. while chailai rice cost 185 yuan/mt.

M/ 1929-1979: Retail main market (Taipei City) polished rice price is for ponlai rice, the most predominant variety.

N/ 1931-1980: Recorded in brown rice--changed to milled rice at the ponlai rate of .94.

O/ 1942: Government interference in the rice market began in 1942 when the Japanese tried to ration rice supplies and made compulsory collections of rice to aid food-short Japan.

P/1943-1977: Since 1943, irrigated area under Public Irrigation System (公共灌溉) has been included under Water Conservancy Association area (水利協會).

Q/1945-1977: Since 1945, the government has not collected figures for irrigation systems without official recognition or for irrigated area under private control not connected to the association area. Thus, the area of irrigation and drainage presented here appears proportionately smaller. The question as to what percentage private area may make up of the total is moot, although by the 1940s private area was probably less than five percent of total irrigated and drained area. A Ph.D. thesis by Teng-hui Lee, "Inter-sectoral Capital Flows in the Economic Development of Taiwan, 1895-1960," Cornell University, 1968, suggests that privately irrigated land makes up 15 percent of the total irrigated area (p. 94), but no documentation is presented. Undoubtedly, irrigated area may not have increased in the post-war period as much as one might suspect because effort has been concentrated on more rational and timely use of existing facilities rather than on the construction of new facilities. Figures supplied by the Water Conservancy Ministry.

R/1946-1977: By 1946, irrigated and drained area was subdivided by types of area irrigated (double-cropping fields, single-cropping fields, etc.) and types of area drained (paddy fields and dry-farmed fields). From this breakdown, it is obvious that area of drained land makes up a substantial portion of total area irrigated and drained, ranging from 6 percent to over 20 percent depending on the year under consideration.

S/1946-1968: Population figures exclude servicemen and foreign nationals.

T/ 1947-1972: Procurement price refers to the official purchase price of paddy rice, first and second crop prices averaged. The purchase price for second crop paddy rice is set a little higher than the first crop paddy rice price.

U/ 1949: Since June 15, 1949, New Taiwan Dollar in use (NT\$).

V/ 1958-1980: Farm-harvest price is for ponlai paddy rice.

W/ 1959: No number listed for 1959 in the source used.

X/ 1966-1978: Represents the average wage paid to unskilled laborers for construction work in Taipei.

Y/ 1969-1982: Population figures include servicemen.

Z/ 1972-1982: From 1972, rice processed products not included.

aa/ 1973-1980: Procurement price refers to the official purchase price for first and second crop ponlai rice averaged.

bb/ From 1976, rice area refers to harvested area, not planted area.

cc/ 1980-1982: Wholesale rice price is an average Taiwan price for white ponlai rice. Because this price is in milled form, it is about 10 percent greater than comparable brown rice prices.

Sources of Data for Appendix Tables IIa and IIb: Taiwan Province

1. Cultivated Area

1900-1921: Taiwan Province, Governor-General Directorate of Statistics, Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51 Years) (Taipei: 1946).

1922-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

1980-1982: Taiwan Province. Council for Economic Planning and Development, Executive Yuan, Taiwan Statistical Data Book (Taipei: 1983).

2. Rice Production

1900: Hsieh, S. C., and Lee, T. H., "Agricultural Development and Its Contributions to Economic Growth in Taiwan," Economic Digest Series: No. 17 (Taipei: Joint Commission on Rural Reconstruction, 1966), p. 15.

1901-1921: JCRR, Rural Economics Division, Taiwan Agricultural Statistics 1901-1965, Economic Digest Series: No. 18 (Taipei: 1966).

1922-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

1980-1982: Taiwan Province. Council for Economic Planning and Development, Executive Yuan, Taiwan Statistical Data Book (Taipei: 1983).

3. Rice Area

1900: Hsieh, S. C. and Lee, T. H., "Agricultural Development and Its Contributions to Economic Growth in Taiwan," Economic Digest Series: No. 17 (Taipei: Joint Commission on Rural Reconstruction, 1966), p. 15.

1901-1921: JCRR, Rural Economics Division, Taiwan Agricultural Statistics 1901-1965, Economic Digest Series: No. 18 (Taipei: 1966).

1922-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

1980-1982: Taiwan Province. Council for Economic Planning and Development, Executive Yuan, Taiwan Statistical Data Book (Taipei: 1983).

4. Rice Yield

1900-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Area Irrigated and Drained

1903-1945: Bank of Taiwan. Taiwan shuili wenti (Questions of Water Management in Taiwan), Economic Series No. 4 (Taipei: 1950).

1946-1968: Taiwan Province. Department of Budget, Accounting and Statistics, Statistical Yearbook of Taiwan (Taipei).

1969-1977: Taiwan Province. Department of Agriculture and Forestry, Taiwan Agricultural Yearbook (1947-1978).

6. Rice Imports

1900-1933: Ishibashi, Tanzan, ed., Foreign Trade of Japan: A Statistical Survey (Nihon bōeki yōran) (Tokyo: Toyo Keizai Shimposha, 1975).

1934-1980: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C., 1983).

7. Rice Exports

1900-1933: Ishibashi, Tanzan, ed., Foreign Trade of Japan: A Statistical Survey (Nihon bōeki yōran) (Tokyo: Toyo Keizai Shimposha, 1975).

1934-1980: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C., 1983).

8. Population

1900-1904: Taiwan Province. Governor-General of Taiwan, The Statistical Summary of Taiwan (Tokyo: Japan Times Press, 1912).

1905-1910: Taiwan Province. Governor-General, Directorate of Statistics, Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51 Years) (Taipei: 1946).

1911-1965: JCRR, Rural Economics Division, Taiwan Agricultural Statistics 1901-1965, Economic Digest Series: No. 18 (Taipei: 1966).

1966-1982: Taiwan Province. Council for Economic Planning and Development, Executive Yuan, Taiwan Statistical Data Book (Taipei: 1982). Source: The Statistical Report of Household Registration, MOI.

9. Farm-Harvest Price

1901-1945: Taiwan Province. Governor-General, Directorate of Statistics Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51 Years) (Taipei: 1946).

1951-1957: FAO, World Rice Economy in Figures, 1965 as quoted in Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, 1980), pp. 85-86.

1958-1980: Taiwan Province. Department of Agriculture and Forestry, Taiwan Agricultural Prices Monthly (Taipei).

10. Official Purchase Price

1947-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

1980: Taiwan Province. Department of Agriculture and Forestry, Taiwan Agricultural Prices Monthly (Taipei).

11. Wholesale Brown Rice Price (Main Market, Taipei City)

1905-1927: Taiwan Province. Governor-General, Directorate of Statistics, Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51 Years) (Taipei: 1946).

1928-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).  
1980-1982: Taiwan Province. Council for Economic Planning and Development,  
Executive Yuan, Taiwan Statistical Data Book (Taipei: 1982).

12. Retail Rice Price (Main Market, Taipei City)

1905-1929: Taiwan Province. Governor-General, Directorate of Statistics,  
Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51  
Years) (Taipei: 1946).

1930-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

13. Farm Wage Rate

1911-1942: Hsieh, S. C. and Lee, T. H., "Agricultural Development and Its  
Contributions to Economic Growth in Taiwan," Economic Digest Series:  
No. 17 (Taipei: Joint Commission on Rural Reconstruction, 1966), p. 97.

1966-1978: Taiwan Province, Bureau of Budget, Accounting and Statistics,  
Commodity-Price Statistics Monthly Taipei City (Taipei).

14. Domestic Apparent Per Capita Brown Rice Availability

1900-1982: Calculated by dividing brown rice production (2) by population  
(8) on an annual basis.

15. First Crop Rice Area

1901-1921: Taiwan Province. Governor-General, Directorate of Statistics,  
Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51  
Years) (Taipei: 1946).

1922-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

16. First Crop Brown Rice Production

1901-1921: Taiwan Province. Governor-General, Directorate of Statistics,

Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51 Years) (Taipei: 1946).

1922-1979: Taiwan Province. Food Bureau, Taiwan Food Statistics Book (1980).

17. First Crop Brown Rice Yield

1901-1979: Calculated by dividing brown rice production (16) by rice area (15) on an annual basis.

Country Sources of Basic Data: Taiwan Province

Data sources published prior to World War II are in Japanese, while those dating from after the war are in Chinese, or Chinese and English. In addition to regular annual or monthly statistical journals, Taiwan has also published several compendiums of agricultural statistics. Only a sampling of the most important statistical material is listed here.

Compendiums

1. The Governor-General of Taiwan, The Statistical Summary of Taiwan (Tokyo: Japan Times Press, 1912).
2. Taiwan Province. Governor-General, Directorate of Statistics, Taiwansheng wushiyanianlai tongji tiyao (Summary of Statistics for 51 Years) (Taipei: 1946).
3. Joint Commission on Rural Reconstruction, Rural Economics Division, Taiwan Agricultural Statistics 1901-1965, Economic Digest Series: No. 18 (Taipei: 1966).
4. Joint Commission on Rural Reconstruction, Rural Economics Division, Taiwan Agricultural Statistics 1961-1975, Economic Digest Series: No. 22 (Taipei: 1977).

Regular Statistical Journals

1. Taiwan Province. Department of Budget, Accounting and Statistics, Statistical Abstract of Taiwan (Taipei).
2. Taiwan Province. Department of Budget, Accounting and Statistics, Statistical Yearbook of Taiwan (Taipei).
3. Taiwan Province. Department of Agriculture and Forestry, Taiwan Agricultural Prices Monthly (Taipei).
4. Taiwan Province. Department of Budget, Accounting and Statistics, Commodity-Price Statistics Monthly Taipei City (Taipei).
5. Taiwan Province. Department of Agriculture and Forestry, Taiwan Agricultural Yearbook (Taipei).
6. Taiwan Province. Food Bureau, Taiwan Food Statistics Book (Taipei).
7. Taiwan Province. Economic Planning Council, Executive Yuan, Taiwan Statistical Data Book (Taipei).

Useful Secondary Sources

1. Taiwan Province. Governor-General, Taiwan beikoku yoran (Summary of Taiwan Rice Production) (Taipei: 1939).
2. Kawano, Shigeto, Taiwan beikoku keizai ron (Treatise on the Rice Economy of Taiwan) (Tokyo: Yuhikaku, 1941).
3. Shen, T. H., Agricultural Development on Taiwan Since World War II (Ithaca, New York: Comstock Publishing Associates - A Division of Cornell University Press, 1964).
4. Hsieh, S. C. and Lee, T. H., "Agricultural Development and Its Contribution to Economic Growth in Taiwan--Input-Output and Productivity Analysis of Taiwan's Agricultural Development," Economic Digest Series: No. 17 (Taipei: JCRR, April 1966).

5. Chen, Hsu and Mao, "Rice Policies of Taiwan," mimeo of paper presented at the workshop on the "Political Economy of Rice," sponsored by the Food Research Institute, Stanford University, at IRRI, Los Banos, Philippines, July 1974.
6. Mizoguchi, Toshiyuki, Taiwan Chosen no keizai seicho: bukka tokei o chushin toshite (Economic Growth in Taiwan and Korea with Special Reference to Price Statistics) (Tokyo: Iwanami, 1975).
7. Kikuchi, Masao, "Irrigation and Rice Technology in Agricultural Development: A Comparative History of Taiwan, Korea and the Philippines," Ph.D. thesis, University of Hokkaido, 1975.

Important Chinese Terms

糙米	Brown Rice
躉售	Wholesale Price
水稻田	Paddy Land
陸稻田	Dry Land
零售	Retail Price
占米	Chailai Rice
蓬萊米	Ponlai Rice

Acronyms/Conversion Factors

JCRR: Joint Commission on Rural Reconstruction. Name changed to Council for Agricultural Planning and Development (CAPD) in 1979.

PFB: Provincial Food Board

Money Unit

Prior to June 14, 1949 Taiwan dollar (yuan) used.

Since June 15, 1949 New Taiwan dollar (NT\$) in use.

In 1980 1 US\$ = 36.01 NT\$ official exchange rate

In 1980 1 US\$ = 38.40 NT\$ free-market exchange rate

1 kg. paddy rice = 0.76 kg. brown rice

1 kg. ponlai brown rice = 0.93 kg. polished rice (domestic)

1 kg. chailai brown rice = 0.94 kg. polished rice (domestic)

1 hectare = 1.03 chia (甲)

1 chia = 0.9699 ha.

1 old catty (舊斤) = 0.5968 kg.

1 shih catty (市斤) = 0.5 kg.

1 koku brown rice = 150 kg.

1 koku paddy = 187.5 kg.

1 koku rice = 136.5 kg.

### III. JAPAN

#### Rice Statistics in Japan\*

The collection of agricultural statistics stretches back into the mid-nineteenth century and has been an important government activity since. The importance of agricultural statistics is attested to by numerous Japanese statistical publications, many prepared on a regular basis. Although pre-war data do suffer from inconsistencies, problems are minor compared to those found in other Asian rice economies. Rice, as the most important food crop, has received wide statistical coverage. A quick glance at the table shows that Japanese rice data are far more complete than any other country's data. One problem in the usage of Japanese data is that many statistical publications appear in Japanese only, although several dual-language, general-purpose publications provide ample information for most users.

Agricultural statistics are collected, amalgamated, and published by the Statistics and Information Department within the Ministry of Agriculture, Forestry and Fisheries. As in many other countries, a Bureau of Statistics collects and publishes general statistics, including series for rice imports, exports, and prices. Other agencies, including the Food Agency and other ministries, collect and amalgamate statistics of interest as well.

Rice area and yields have been regularly collected since the late 1800s, but objective measurement on a nation-wide basis has only been used since 1947. Areas and yields are collected using stratified three-stage random sampling. Production is estimated by multiplying yields and areas. Japan now uses the metric system, recording production in metric tons and area in hectares. Prior to World War II, a wide range of Japanese measures were used. Area was usually

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\* Special thanks to the Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries.

recorded in cho, while output was commonly recorded in koku, or sometimes in piculs, (1 picul = 60 kg.), both of which are volume measures. Most statistical publications report in brown or husked rice as in Taiwan and Korea, so figures must be changed from brown to milled or rough form for inter-country comparisons to be made. This peculiarity of the Japanese system, coupled with the former use of the volume measurement, the koku, made the transformation from brown to milled or rough rice somewhat inaccurate. This is likely to be the source of considerable error in the pre-war period. Most rice production figures are reported in Japanese rice years running from November 1 to October 31. Imports, exports, and prices are usually reported in calendar or fiscal years, so care must be exercised when using data to determine the year designation used by the particular source.

TABLE IIIa

JAPAN	Arable area '000' ha	Rice prod'n paddy '000' mt	Rice area planted '000' ha	Rice yield paddy mt/ha	Rice area irrigated '000' ha
Year <sup>A</sup>	1	2	3	4	5
1900	5199(B)	7775(C)	2805(C)	2.77(C)	2731
1901	5224	8796	2824	3.11	2745
1902	5243	6925	2824	2.45	2740
1903	5244	8714	2840	3.07	2755
1904	5251	9644	2857	3.38	2775
1905	5277	7158	2858	2.50	2783
1906	5293	8681	2875	3.02	2799
1907	5392	9198	2882	3.19	2804
1908	5459	9738	2898	3.36	2815
1909	5571	9833	2914	3.37	2827
1910	5606	8744	2925	2.99	2834
1911	5650	9696	2949	3.29	2852
1912	5709	9416	2978	3.16	2869
1913	5746	9424	3005	3.14	2886
1914	5767	10689	3008	3.55	2886
1915	5811	10486	3031	3.46	2907
1916	5848	10960	3046	3.60	2918
1917	5903	10231	3058	3.35	2928
1918	5977	10256	3067	3.34	2935
1919	6021	11404	3079	3.70	2943
1920	6034	11851	3101	3.82	2960
1921	6047	10346	3109	3.33	2968
1922	6040	11380	3115	3.65	2972
1923	5989	10396	3121	3.33	2982
1924	6015	10720	3116	3.44	2980
1925	6017	11195	3128	3.58	2992
1926	6030	10424	3132	3.33	2996
1927	6028	11644	3147	3.70	3013
1928	6035	11306	3165	3.57	3030
1929	5848	11168	3184	3.51	3049
1930	5867	12534	3212	3.90	3079
1931	5905	10353	3222	3.21	3089
1932	5942	11324	3230	3.51	3097
1933	5979	13280	3147	4.22	3022
1934	5988	9720	3146	3.09	3022
1935	6008	10774	3178	3.39	3044
1936	6035	12626	3180	3.97	3042
1937	6048	12435	3190	3.90	3044
1938	6028	12350	3194	3.87	3048
1939	6029	12931	3166	4.08	3016

TABLE IIIa (cont'd)

JAPAN	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price milled yen/mt
Year	6	7	8	9
1900	164(D/E/F)	53(D/E)	44037(G)	84(H)
1901	214	75	44582	79
1902	218	101	45181	88
1903	834	48	45766	100
1904	893	68	46320	92
1905	841	34	46785	90
1906	530	39	47293	102
1907	487	41	47830	115
1908	473	38	48192	111
1909	379	57	48793	89
1910	264	89	49434	93
1911	440	66	50120	127
1912	436	45	50847	152
1913	691	49	51581	152
1914	646	58	52311	96
1915	463	117	53036	91
1916	364	133	53747	104
1917	376	161	54379	148
1918	980	71	54887	244
1919	1425	48	55237	348
1920	460	33	55963	272
1921	713	42	56666	268
1922	1150	126	57390	196
1923	931	106	58119	234
1924	1430	117	58876	284
1925	1813	288	59737	262
1926	1431	83	60741	242
1927	1901	195	61659	208
1928	1688	151	62595	198
1929	1336	84	63461	195
1930	1290	84	64450	123
1931	1728	300	65457	121
1932	1741	102	66434	150
1933	1912	94	67432	148
1934	2138	141	68309	196
1935	1953	120	69254	205
1936	6181	84	70114	203
1937	1782	97	70630	229
1938	2291	88	71013	242
1939	1471	115	71380	305

TABLE IIIa (cont'd)

JAPAN	Wholesale price brown rice main market Tokyo yen/mt	Retail price polished rice average yen/mt	Farm wage rate yen/day	Domestic apparent per capita paddy availability kg/cap/yr
Year	11	12	13	14
1900	79	110	0.37(I)	176
1901		113	0.36	197
1902		116	0.40	153
1903		132	0.42	190
1904		124	0.38	208
1905		120	0.38	153
1906		139	0.41	183
1907		152	0.44	192
1908		140	0.45	202
1909		119	0.41	201
1910		116	0.42	177
1911		153	0.50	193
1912	134(K)	179	0.56	185
1913	144	193	0.59	182
1914	116	147	0.51	204
1915	87	115	0.49	197
1916	88	121	0.52	204
1917	124	172	0.65	188
1918	200	270	1.01	187
1919	293	386	1.63	206
1920	324	392	1.64	211
1921	195	280	1.57	182
1922	246	319	1.51	198
1923	211	288(L)	1.47	179
1924	251	309	1.42	182
1925	280	337	1.44	187
1926	256	316	1.36	168
1927	240	295	1.43	184
1928	209	247	1.39	176
1929	195	253	1.31	173
1930	182	238	1.12	190
1931	135(M/N)	162	0.89	154
1932	155	181	0.78	166
1933	156	185	0.81	190
1934	190	221	0.81	139
1935	217	251	0.86	152
1936	223	261	0.90	175
1937	236	279	1.01	173
1938	250	302	1.21	169
1939	278	294(O)	1.60	176

TABLE IIIa (cont'd)

JAPAN	Main(wet) rice crop area planted '000' ha	Main(wet) rice crop production paddy '000' ha	Main(wet) rice crop yield paddy mt/ha	Arable ha/ person
Year	15	16	17	18
1900	2731(C/J)	7652(C/J)	2.80(C/J)	.12
1901	2745	8661	3.16	.12
1902	2740	6811	2.49	.12
1903	2755	8590	3.12	.11
1904	2775	9534	3.44	.11
1905	2783	7046	2.53	.11
1906	2799	8553	3.06	.11
1907	2804	9048	3.23	.11
1908	2815	9573	3.40	.11
1909	2827	9665	3.42	.11
1910	2834	8569	3.02	.11
1911	2852	9503	3.33	.11
1912	2869	9236	3.22	.11
1913	2886	9218	3.19	.11
1914	2886	10478	3.63	.11
1915	2907	10236	3.52	.11
1916	2918	10668	3.66	.11
1917	2928	10019	3.42	.11
1918	2935	10026	3.42	.11
1919	2943	11109	3.77	.11
1920	2960	11506	3.89	.11
1921	2968	10069	3.39	.11
1922	2972	11126	3.74	.10
1923	2982	10150	3.40	.10
1924	2980	10531	3.53	.10
1925	2992	10896	3.64	.10
1926	2996	10188	3.40	.10
1927	3013	11354	3.77	.10
1928	3030	11015	3.64	.10
1929	3049	11003	3.61	.09
1930	3079	12234	3.97	.09
1931	3089	10123	3.28	.09
1932	3097	11065	3.57	.09
1933	3022	13049	4.32	.09
1934	3022	9543	3.16	.09
1935	3044	10518	3.46	.09
1936	3042	12295	4.04	.09
1937	3044	12208	4.01	.08
1938	3048	12035	3.95	.08
1939	3016	12565	4.17	.08

TABLE IIIb

JAPAN	Arable area '000' ha	Rice prod'n. paddy '000' mt	Rice area planted '000' ha	Rice yield paddy mt/ha	Rice area irrigated '000' ha	Rice imports milled '000' mt
Year	1	2	3	4	5	6
1940	6027	11414	3152	3.62	3004	1675
1941	5812	10329	3156	3.27	3011	2265
1942	5764	12520	3138	3.99	3001	2352
1943	5670	11791	3084	3.82	2967	1084
1944	5795	10980	2955	3.72	2852	720
1945	5301	7340	2869	2.56	2798	236
1946	5271	11510	2781	4.14	2719	16
1947	5242	10998	2883	3.81	2811	3
1948	5244	12458	2957	4.21	2866	44
1949	-	11729	2987	3.93	2875	92
1950	5048	12064	3011	4.01	2877	720
1951	-	11303	3016	3.75	2877	765
1952	5401	12404	3009	4.12	2872	1001
1953	-	10299	3014	3.42	2866	1046
1954	-	11391	3051	3.73	2888	1735
1955	5140	15481	3222	4.80	3045	1156
1956	6013	13624	3243	4.20	3059	977
1957	6045	14330	3239	4.42	3075	413
1958	6064	14991	3253	4.1	3080	553
1959	6072	15626	3288	4.75	3105	286
1960	6071	16072	3308	4.86	3124	227
1961	6085	15524	3301	4.70	3134	154
1962	6081	16261	3285	4.95	3134	178(AA)
1963	6061	16015	3272	4.89	3133	222
1964	6042	15730	3260	4.83	3126	415
1965	6004	15511	3255	4.77	3123	967
1966	5996	15931	3254	4.90	3129	812
1967	5938	18066	3263	5.54	3149	509
1968	5897	18061	3280	5.51	3171	271
1969	5852	17504	3274	5.35	3173	56
1970	5756	15861	2923	5.43	2836	19
1971	5741	13609(FP)	2695	5.05	2626	13
1972	5683	14861	2640	5.63	2581	3
1973	5647	15187	2622	5.79	2568	24
1974	5615	15365	2724	5.64	2675	63
1975	5572	16456	2764	5.95	2719	36
1976	5536	14715	2779	5.30	2741	22
1977	5515	16369	2757	5.94	2723	43
1978	5494	15736	2548	6.18	2516	62
1979	5474	14948	2497	5.99	2468	15
1980	5461	12189	2377	5.13	2350	14
1981	5442	12824	2278	5.63	2251	
1982	5426	12838	2257	5.69	2230	

TABLE IIIb (cont'd)

JAPAN	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price milled yen/mt	Procurement price brown rice yen/mt
Year	7	8	9	10
1940	142	71933	307	
1941	150	72218		
1942	105	72880	(P)	(P)
1943	94	73903	1593(Q)	313(R)
1944	67	74433	2540	313
1945	35	72147	12035	2000
1946	--	75750	33867	3667
1947	--	78101	66035	11333
1948	--	80002	110877	23967
1949	--	81773	32308(U)	28333
1950	7	83200	38028	28983(V)
1951	5	84541	55531	43657
1952	1	85808	64249	47000
1953	5	86981	78095	50000
1954	-(X)	88239	76483	56400
1955	-	89276	76483	61733
1956	-	90172	74139	64083
1957	-	90928	76996	63133
1958	-	91767	76630	64967
1959	-	92641	76776	64667
1960	-	93419	7776	71246(Y)
1961	-	94287	80366	72504
1962	-	95181	74900(BB)	77605
1963	-	96156	89200	85696
1964	-	97818	98000	95522
1965	-	98275	114000	107802
1966	-	99036	118500	108867
1967	-	100196	128000	118867
1968	-(EE)	101331	139000	130133
1969	364	102536	147500	137333
1970	630	103720	149600	137067
1971	966	105145	148200	137133
1972	201	107595	156700	149193
1973	540	109104	149600	171380
1974	309	110573	228200	226720
1975	11	111940	264600	259787
1976	-	113089	295900	275767
1977	17	114154	325700	287200
1978	82	115174	336300	293600
1979	603	116133		316465(HH)
1980	689	117060		316465(II)
1981		117884		
1982		118693		

TABLE IIIb (cont'd)

JAPAN	Wholesale price brown rice main market Tokyo-yen/mt	Retail price polished rice main market Tokyo-yen/mt	Farm wage rate yen/day	Domestic apparent per capita paddy availability kg/cap/yr
Year	11	12	13	14
1940	316	325	2	155
1941	318	325	2	140
1942	317(P)	325(P)	2	169
1943	330	325	3	157
1944	346	357	4	146
1945	363	357	12	101
1946	2407(S)	2540(T)	30	151
1947	10867	7319	79	140
1948	27342	21789	174	153
1949	35672	39067	293	141
1950	38850	44498	248(W)	141
1951	49684	60400	252	131
1952	54450	62000	277	145
1953	59800	68000	305	118
1954	67517	76498	349	129
1955	67433	76498	357	173
1956	67467	77130	363	151
1957	69933	81004	388	158
1958	72733	87004	394	163
1959	72733	87004	410	169
1960	79687(Z)	87004	440	172
1961	79231	87004	530	165
1962	32601	87867	646	171
1963	88260	97502	756	167
1964	91484	97502	877	162
1965	104963	112498	966	158
1966	111850	119000(CC/DD)	1057	161
1967	119945	119000	1174	180
1968	133168	141000	1402	178
1969	137308	152000	1550	171
1970	136300	152000	1820	153
1971	135110	152000	2005	129
1972	138864	160000	2246	138
1973	142967	160000	2412(GG)	139
1974	165073	173000	3210	139
1975	208663	223000	3640	147
1976	236850	258000	3844	130
1977	260458	283000	4441	143
1978	270531	300000	4620	137
1979	272418(HH)	314000(HH)	4789	129
1980	281135(II)	325000	5054	104
1981				109
1982				108

TABLE IIIb (cont'd)

JAPAN	Main(wet) rice area planted	Main(wet) rice prod'n paddy	Main(wet) rice yield paddy	Arable ha/person
Year	'000' ha	'000' mt	mt/ha	
	15	16	17	18
1940	3004	11194	3.73	.08
1941	3011	10139	3.37	.08
1942	3001	12324	4.11	.08
1943	2967	11591	3.91	.08
1944	2852	10833	3.80	.08
1945	2798	7279	2.60	.07
1946	2719	11405	4.19	.07
1947	2811	10933	3.89	.07
1948	2866	12240	4.27	.06
1949	2875	11554	4.02	-
1950	2877	11765	4.09	.06
1951	2877	11110	3.86	-
1952	2872	12095	4.21	.06
1953	2866	10048	3.51	-
1954	2888	11119	3.85	-
1955	3045	15091	4.96	.06
1956	3059	13309	4.35	.07
1957	3075	13985	4.55	.07
1958	3080	14611	4.74	.07
1959	3105	15198	4.89	.06
1960	3124	15674	5.02	.06
1961	3134	15173	4.84	.06
1962	3134	15953	5.09	.06
1963	3133	15661	5.00	.06
1964	3126	15453	4.94	.06
1965	3123	15226	4.88	.06
1966	3129	15658	5.00	.06
1967	3149	17821	5.66	.06
1968	3171	17779	5.61	.06
1969	3173	17246	5.44	.06
1970	2836	15660	5.52	.05
1971	2626	13378	5.09	.05
1972	2581	14708	5.70	.05
1973	2568	15085	5.87	.05
1974	2675	15228	5.69	.05
1975	2719	16356	6.02	.05
1976	2741	14624	5.34	.05
1977	2723	16278	5.98	.05
1978	2516	15683	6.23	.05
1979	2468	14873	6.03	.05
1980	2350	12115	5.16	.05
1981	2251	12755	5.67	.05
1982	2230	12765	5.72	.05

Notes to Appendix Tables IIIa and IIIb: Japan

A/ Rice data presented in Appendix Table III are for Japan Proper including Okinawa through 1944 but excluding it from 1945. In 1972, Okinawa was returned to Japan. From 1974 it is included.

B/ 1900-1982: Arable land area refers to total cultivated area (耕地面積) including paddy and upland area as well as land planted to trees, vines, and shrubs on an annual basis. Arable area figures for the period 1900-1940 were collected by local agricultural associations (nōkai) and local governments for the central government. Figures for 1941-1948 are interpolations based on past trends. 1950-1955 figures are taken from the 1950 World Agricultural Census, the 1952 Annual Basic Survey, and the 1955 Temporary Basic Survey on Agriculture, respectively. The 1956-1982 series are taken from the "Sample Re-measurement Survey for Arable Land." For further information see: Japan. Ministry of Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics) (Tokyo: 1981), Table XXV, or Ohkawa, Shinohara, Umemura, eds., Estimates of Long-Term Economic Statistics of Japan Since 1868, "Agriculture and Forestry" (Tokyo: Tōyō Keizai Shinposha, 1966), pp. 139-41 or pp. 75-90. Area data exclude Okinawa prior to 1923 and from 1945-1973, and include it from 1924-1943 and from 1974-1982.

C/ 1900-1982: Rice area, output, and yield are recorded on a calendar-year basis. In the original sources, rice production is recorded in brown rice. To simplify matters and encourage comparison between Japan and other Asian countries, rice production was changed to paddy form using a constant conversion factor of 1.25.

D/ 1900-1980: Rice imports and exports are the simple totals of rough rice

玄米), white rice (精米), and other (其他).

E/ 1900-1961: Rice imports and exports are in rice years, Nov. 1-Oct. 31.

F/ 1900-1945: Rice imports include rice imported from Korea, Taiwan, and other Japanese possessions. This is a very important distinction as many official import series do not count rice imports from Japanese colonies as true imports. Figures for such series are much smaller than those recorded here. From 1945 and the collapse of the Japanese empire, imports from former colonies are simply counted as imports.

G/ 1900-1978: Population reported on a Nov. 1-Oct. 31 basis.

H/ 1900-1940 and 1949-1961: Farm-harvest price is for paddy and upland field rice (水陸稻). For the 1900-1940 period, weighted averages of various descriptions and grades of rice were utilized in an effort to form a coherent price series. For some years, appropriate data were unavailable and interpolations were used. 1902-1908 and 1912-1914 figures are interpolations. Ministry of Agriculture and Forestry data, published in Commodities Statistics of Farm Household Economy Survey, were used for the 1949-1961 period. For a more detailed description of sources and methods, see Ohkawa, Shinohara, and Umemura, eds., Estimates of Long-Term Economic Statistics of Japan Since 1868, Vol. 8, "Prices" (Tokyo: Tōyō Keizai Shinposha, 1967), pp. 74-77 and 124-126.

I/ 1900-1980: Farm wage rate is for male workers. 1900-1963 farm wage rate is for daily contract workers in agriculture (日雇) (hiyatoi). Daily workers, who commute to work, receive regular wages with some meals and are frequently part time are to be distinguished from nenkō (年雇), who are

permanently employed, live on the farm, and receive additional compensation (food, clothing) as well as cash wages.

J/ Unlike in most other rice-growing countries, in Japan rice area is subdivided into wet and dry land, although at present about 99 percent of the rice crop is planted on paddy land. Paddy or wet land is defined as area having facilities for irrigation and storing water. Upland area does not have these facilities.

K/ 1912-1930: Wholesale rice price is the average price of medium grade indigenous brown rice at the Fukagawa Rice Exchange in Tokyo. Original material was published in the Annual Report of Food Control Statistics.

L/ 1923-1938: Retail rice price is for domestic, ordinary variety, third-grade rice (内地米常用了等).

M/ 1931: The fall in the wholesale brown rice price is an actual market drop brought about by the serious 1930s world-wide depression.

N/ 1931-1945: Wholesale brown rice price is for native, home-grown rice (内地米). Data were amassed by the Bank of Japan and are on a calendar-year basis.

O/ 1939-1945: Retail rice price is an average Tokyo (main market) price for medium quality rice. Beginning on Nov. 6, 1939, rice prices were fixed as part of the war effort. In 1942, the Food Control Law (Shokuryō kanri ho) placed the production and marketing activities of all major food items under central control. The Food Control Law established compulsory procurement and rationing and was executed by the Ministry of Agriculture and Forestry. Although control over other foods was gradually returned to the private sector, rice remained

under central control. The retail rice price continued to be strictly fixed until 1972, when pricing was liberalized. Retail rice prices shown here are official government prices. A free market with much higher prices also existed, but data for these prices are not easily available.

P/ In 1942, the Japanese government took strict measures to control the marketing and pricing of rice under the Food Control Law (Shokuryō kanri ho). Under war-time conditions, this allowed the government to procure all of the rice crop and to ration its consumption in urban areas. After the war, control was gradually relaxed until only rice still remained under the jurisdiction of the Food Agency. The procurement price is fixed by the government and is set very high, helping to ensure farmers an adequate income. The Food Agency sells rice to wholesalers at a fixed "resale" price (this is the price recorded under "Wholesale Rice Price" in the table), who in turn sell the rice to retailers. Retailers and wholesalers are allowed a certain margin of profit by law. Prior to 1972, retail prices were controlled by the government, but under the present surplus conditions, control has been relaxed, and a guided or suggested price substituted.

In the early days of food control when rice was scarce and government prices low, the black-market, farm-harvest price was considerably higher than fixed procurement prices. A substantial portion, perhaps 30-40 percent of production, was marketed clandestinely. However, as the supply situation improved and government procurement prices rose, the black market share declined drastically. In 1969, with mounting surpluses, the government began to encourage legal marketing of rice through cooperatives.

It should be clear from the price tables that the government has been accumulating large deficits while financing the rice program. As the tables

show, it sells rice to wholesalers for a smaller sum than it pays farmers. This has caused considerable problems in the government and has been addressed through the instigation of acreage substitution plans, large, subsidized exports, diversion of surplus rice to other industries (for example, feed, confectionary, or alcohol), and cut backs in rises in the procurement price.

Q/ 1943-1948: Farm-harvest price is for polished rice and is the price at which producers sold rice (to special collectors) after prefectural quota amounts were met. It can be considered an above-quota price.

R/ 1943-1949: Procurement price is for third-grade brown rice.

S/ 1946-1959: Wholesale rice price for domestic brown rice is the government resale price. The resale price is the price the government receives when it markets procured rice to wholesalers. Prices are on a calendar-year basis.

T/ 1946-1965: Retail rice price is the average price for domestic rationed rice 国内地白米 (hai naichi haku mai). As mentioned in Footnote P, a flourishing black market existed until the late 1950s. Prices on the black market were considerably higher than fixed rationed prices. For example, in 1952, polished rice sold for an average price of 100760 yen/mt. on the Tokyo black market while rationed polished rice cost 62000 yen/mt. (Rice Statistical Compilation, p. 61).

U/ 1949-1961: Farm-harvest price is the "price of agricultural products" and refers to prices received by farmers.

V/ 1950-1959: Procurement price is for domestic, brown, nonglutinous rice and is in calendar years.

W/ 1950-1972: Farm wage rate is for male workers on a daily basis.

X/ 1954-1967: No or negligible rice exports made.

Y/ 1960-1980: Procurement price is for milled rice and is recorded in Japanese fiscal years (April-March).

Z/ 1960-1980: Wholesale rice price for standard quality rice is the government resale price for milled rice. The resale price is the price the government receives when it markets procured rice to wholesalers.

aa/ 1962-1980: Rice imports are in calendar years.

bb/ 1962-1978: Farm-harvest price is on a fiscal year basis (April-March) and is for milled rice.

cc/ 1966-1980: Retail rice price is the official retail price for medium-grade domestic polished rice.

dd/ 1966-1980: Retail rice price is in Japanese fiscal years (April-March).

ee/ 1968-1980: Rice exports are in calendar years.

ff/ 1971-1982: The rapid drop in rice area registered since 1971 is partly a function of an overall decline in cultivated area due to urbanization. The government also began to actively encourage farmers to plant paddy land to other crops, as unmanageable surpluses accumulated at great cost to the taxpayers. The Food Agency, responsible for the procurement of rice at high fixed prices, began to limit its procurement activities. The government also instigated a set-aside program that paid farmers for idling rice land or switching it to other crops.

gg/ 1973-1980: Farm wage rate is for temporary male employees in agriculture and is on a fiscal year basis.

hh/1979: Differential pricing scheme initiated.

ii/1980: Preliminary.

Sources of Data for Appendix Tables IIIa and IIIb: Japan

1. Arable Area

1900-1903: Ohkawa, Kazushi; Shinohara, Miyoehei; and Umemura, Mataji, eds.,  
Estimates of Long-Term Economic Statistics of Japan Since 1868, Vol. 9  
"Agriculture and Forestry" (Tokyo: Toyo Keizai Shinposha, 1965).

1904-1963: Japan. Statistics and Information Department, Ministry of  
Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics)  
(Tokyo).

1964-1978: Japan. Bureau of Statistics, Office of the Prime Minister,  
Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1979-1981: Japan. Statistics and Information Department, Ministry of  
Agriculture, Forestry and Fisheries, Abstract of Statistics on Agriculture,  
Forestry and Fisheries (Tokyo: Association of Agriculture Forestry  
Statistics, 1982).

1982: Japan. Statistics and Information Department, Ministry of Agricul-  
ture, Forestry and Fisheries.

2. Rice Production

1900-1959: Japan. Statistics and Information Department, Ministry of  
Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics)  
(Tokyo).

1960-1978: Japan. Bureau of Statistics, Office of the Prime Minister,  
Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1979-1981: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Abstract of Statistics on Agriculture, Forestry and Fisheries (Tokyo: Association of Agriculture Forestry Statistics, 1982).

1982: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries.

### 3. Rice Area

1900-1959: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics) (Tokyo).

1960-1978: Japan. Bureau of Statistics, Office of the Prime Minister, Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1979-1981: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Abstract of Statistics on Agriculture, Forestry and Fisheries (Tokyo: Association of Agriculture Forestry Statistics, 1982).

1982: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries.

### 4. Rice Yield

1900-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

### 5. Rice Area Irrigated

1900-1982: Although data for rice area irrigated as a specific category are not collected, it is generally assumed that paddy or wet-land rice area may be used as a proxy for irrigated area. Sources for the data presented here may be found under Number 15 - Main (wet) Rice Area.

6. Rice Imports

1900-1961: Institute of Developing Economies, One Hundred Years of Agricultural Statistics in Japan (Tokyo: Kabushiki Kaisha Sangyō Tōkei Kenkyūsha, 1969).

1962-1980: Japan External Trade Organization (JETRO), White Paper on International Trade, English Summary (英文通商白書) (Tokyo). Annual.

7. Rice Exports

1900-1949: Institute of Developing Economies, One Hundred Years of Agricultural Statistics in Japan (Tokyo: Kabushiki Kaisha Sangyō Tōkei Kenkyūsha, 1969).

1950-1954: Japan. Ministry of Finance, Nippon gaikoku bōeki nenpyō yushutsu-hen (The Annual Report of Japanese Foreign Trade in the Area of Exports) (Tokyo).

1955-1960: Japan. Ministry of Finance, Nippon gaikoku bōeki nenpyō, shinabetsu-kunibetsu-hen (The Annual Report of Japanese Foreign Trade by Commodity and by Country) (Tokyo).

1961-1967: Kikuchi, Masao; Mochida, Keizo; and Hayami, Yujiro, Rice Statistics in Japan (Los Banos, Philippines: International Rice Research Institute, 1975).

1968-1980: Japan External Trade Organization (JETRO), White Paper on International Trade, English Summary (英文通商白書) (Tokyo). Annual.

8. Population

1900-1919: Institute of Developing Economies, One Hundred Years of Agricultural Statistics in Japan (Tokyo: Kabushiki Kaisha Sangyō Tōkei Kenkyūsha, 1969).

1920-1978: Japan. Bureau of Statistics, Office of the Prime Minister,

Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1979-1982: Japan. Statistics Bureau, Prime Minister's Office, Statistical

Handbook of Japan 1982 (Tokyo: Prime Minister's Office, 1982).

9. Farm-Harvest Price

1900-1940: Ohkawa, Kazushi; Shinohara, Miyohei; and Umemura, Mataji, eds.,

Estimates of Long-Term Economic Statistics of Japan Since 1868,

Vol. 8, "Prices" (物価) (Tokyo: Toyo Keizai Shinposha, 1967).

1943-1958: Japan. Ministry of Finance, Statistical Abstract of Japanese

Economy (Tokyo: 1950).

1959-1961: Ohkawa, Kazushi; Shinohara, Miyohei; and Umemura, Mataji, eds.,

Estimates of Long-Term Economic Statistics of Japan Since 1868, Vol. 8,

"Prices" (Tokyo: Toyo Keizai Shinposha, 1967).

1962-1978: Japan. Bureau of Statistics, Office of the Prime Minister,

Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

10. Procurement Price

1943-1949: Japan. Statistics and Survey Division, Ministry of Agriculture  
and Forestry, Rice Statistical Compilation (Tokyo: 1954).

1950-1959: Kikuchi, Masao; Mochida, Keizo; and Hayami, Yujiro, Rice  
Statistics in Japan (Los Banos, Philippines: International Rice Research  
Institute, 1975).

1960-1980: Ministry of Agriculture, Forestry and Fisheries, Norinsuisansho  
tōkei hyō (Statistical Yearbook of the Ministry of Agriculture, Forestry  
and Fisheries) (Tokyo).

11. Wholesale Brown Rice Price

1912-1930: Japan. Statistics and Survey Division, Ministry of Agriculture and Forestry, Rice Statistical Compilation (Tokyo: 1954).

1931-1945: Japan. Bureau of Statistics, Office of the Prime Minister, Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1946-1949: Japan. Statistics and Survey Division, Ministry of Agriculture and Forestry, Rice Statistical Compilation (Tokyo: 1954).

1950-1959: Kikuchi, Masao; Mochida, Keizo; and Hayami, Yujiro, Rice Statistics in Japan (Los Banos, Philippines: International Rice Research Institute, 1975).

1960-1978: Japan. Ministry of Agriculture and Forestry, Norinshō tōkei hyō (Statistical Yearbook of the Ministry of Agriculture and Forestry) (Tokyo).

1979-1980: Japan. Ministry of Agriculture, Forestry and Fisheries, Norinsuisansho tōkei hyō (Statistical Yearbook of the Ministry of Agriculture, Forestry and Fisheries) (Tokyo).

12. Retail Rice Price

1900-1938: Ohkawa, Kazushi; Shinohara, Miyohei; and Umemura, Mataji, eds., Estimates of Long-Term Economic Statistics of Japan Since 1868, Vol. 8, "Prices" (Tokyo: Toyo Keizai Shinposha, 1967).

1939-1945: General Headquarters, Supreme Commander for the Allied Powers, Economic and Scientific Section, Staple Food Prices in Japan 1930-1948 (1949).

1946-1965: Ohkawa, Kazushi; Shinohara, Miyohei; and Umemura, Mataji, eds., Estimates of Long-Term Economic Statistics of Japan Since 1868, Vol. 8, "Prices" (Tokyo: Toyo Keizai Shinposha, 1967).

1966-1980: The Tsuneta Yano Memorial Society (Yano-Tsuneta Kinekai) under supervision of Ichiro Yano, ed., Nippon: A Charted Survey of Japan (Tokyo: Kokuseisha). Original source: Bureau of Statistics, Office of the Prime Minister.

13. Farm Wage Rate

1900-1963: Ohkawa, Kazushi; Shinohara, Miyohai; and Umemura, Mataji, eds., Estimates of Long-Term Economic Statistics of Japan Since 1868, Vol. 9, "Agriculture and Forestry" (Tokyo: Toyo Keizai Shinposha, 1967).

1964-1972: Kikuchi, Masao; Mochida, Keizo; and Hayami, Yujiro, Rice Statistics in Japan (Los Banos, Philippines: International Rice Research Institute, 1975), Table 25.

1973-1980: Japan. Ministry of Agriculture, Forestry and Fisheries, Abstract of Statistics on Agriculture, Forestry and Fisheries (Tokyo: 1971-1982).

14. Domestic Apparent Per Capita Paddy Availability

1900-1982: Domestic apparent per capita paddy availability is calculated by dividing paddy production (2) by total population (8) on an annual basis.

15. Main (wet) Rice Area

1900-1959: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics) (Tokyo).

1960-1978: Japan. Bureau of Statistics, Office of the Prime Minister, Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1979-1981: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Abstract of Statistics on Agriculture,

Forestry and Fisheries (Tokyo: Association of Agriculture Forestry Statistics, 1982).

1982: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries.

16. Main (wet) Rice Production

1900-1959: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics) (Tokyo).

1960-1978: Japan. Bureau of Statistics, Office of the Prime Minister, Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1980).

1979-1981: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Abstract of Statistics on Agriculture, Forestry and Fisheries (Tokyo: Association of Agriculture Forestry Statistics, 1982).

1982: Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries.

17. Main (wet) Rice Yield

1900-1982: Main (wet) rice yield is calculated by dividing wet rice production (16) by wet rice area (15) on an annual basis.

Country Sources of Basic Data: Japan

In the case of Japan, we are very fortunate in having many primary statistical sources to turn to for both the post- and pre-war period. Some of the most common sources, with a heavy emphasis on those with dual language or English language text, are listed below.

Pre-War Primary Sources \*

1. Japan. Cabinet Impérial, Bureau de la Statistique Générale (Naikaku Tōkei Kyoku), Résumé statistique de l'empire du Japon (Tokio). Dual language French and Japanese text. Also includes statistical information for Taiwan and Korea.
2. Japan. Section of Statistics, The Department of Agriculture and Commerce, The Agricultural and Commercial Statistics for ——— (Tokyo). This series was published on an annual basis for the years 1919-1923. In 1923, The Department of Agriculture and Commerce was replaced by the Department of Agriculture and Forestry. Agricultural and Commercial Statistics was replaced by The Statistical Abstract of the Department of Agriculture and Forestry with the 1924 edition (see post-war sources).
3. Japan. Bureau of Statistics, Dai Nihon teikoku tōkei nenkan (Statistical Yearbook of the Japanese Empire) (Tokyo). After World War II, replaced by the dual language Japan Statistical Yearbook.

Post-War Primary Sources - General

1. Japan. Bureau of Statistics, Office of the Prime Minister, Nihon tōkei nenkan (Japan Statistical Yearbook) (Tokyo: 1949- ).
2. Japan. Bureau of Statistics, Monthly Statistics of Japan (Tokyo).
3. The Tsuneta Yano Memorial Society (Yano-Tsuneta Kinenkai) under supervision of Ichiro Yano, ed., Nippon: A Charted Survey of Japan (Tokyo: Kokuseisha).
4. Japan. Statistics Bureau, Office of the Prime Minister, Statistical Handbook of Japan (Tokyo).

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\* Other important sources that continued to be issued after World War II are listed under "Post-War Primary Sources."

5. Statistics Department, Bank of Japan, Keizai tōkei nenpō (Economic Statistics Yearbook) (Tokyo).
6. Japan External Trade Organization (JETRO), White Paper on International Trade (Tokyo).

Post-War Primary Sources - Agriculture

1. Japan. Ministry of Agriculture, Forestry and Fisheries, The Statistical Abstract of the Department of Agriculture and Forestry (Tokyo).
2. Japan. Food Agency, Shokuryō kanri tōkei nenpō (Statistical Yearbook of Food Control) (Tokyo).
3. Japan. Ministry of Agriculture, Forestry and Fisheries, Norinsuisansho tōkei hyō (Statistical Yearbook of the Ministry of Agriculture, Forestry and Fisheries) (Tokyo).
4. Japan. Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, Sakumotsu tōkei (Crop Statistics) (Tokyo).

Statistical Compendia

1. Masao Kikuchi, Keizo Mochida, and Yujiro Hayami, Rice Statistics in Japan (Los Banos, Philippines: International Rice Research Institute, 1975).
2. Institute of Developing Economies, One Hundred Years of Agricultural Statistics in Japan (Tokyo: Kabushiki Kaisha Sangyō Tōkei Kenkyūsha, 1969).
3. Kazushi Ohkawa, Miyoei Shinohara, and Mataji Umemura, eds., Estimates of Long-Term Economic Statistics of Japan Since 1868 (Tokyo: Tōyō Keizai Shinpōsha, 1965). Thirteen volumes on different subjects, although some are not yet published. No. 8, "Prices" and No. 9, "Agriculture and Forestry" are useful.

4. Tokyo Association of Agriculture - Forestry Statistics, Rice Statistical Compilation (Tokyo: 1954).
5. Nihon Ginkō Tōkeikyoku (Statistics Department, The Bank of Japan), Hundred-Year Statistics of the Japanese Economy (Tokyo: 1966).

Useful Secondary Sources

1. William T. Coyle, Japan's Rice Policy, Foreign Agricultural Economic Report, No. 164 (Washington, D.C.: USDA, Economics and Statistics Service, July 1981).
2. Yujiro Hayami, "Japan's Rice Policy in Historical Perspective," Stanford University, Calif., Food Research Institute Studies, Vol. 14, No. 4 (1975), pp. 359-380.
3. Takekazu Ogura, Can Japanese Agriculture Survive? A Historical and Comparative Approach (Tokyo: Agricultural Policy Research Center, 1980).
4. Kayo Nobufumi, Nihon nōgyo kiso tōkei (Basic Statistics of Japanese Agriculture) (Tokyo: Norin Suisangyo Seisensei Kojo Kaigi, 1968).
5. G. C. Allen, A Short Economic History of Modern Japan (New York: St. Martin's Press, 1981).
6. T. J. Pempel, Policy and Politics in Japan (Philadelphia: Temple University Press, 1982).
7. Takekazu Ogura, ed., Agricultural Development in Modern Japan (Tokyo: Fuji Publishing Co., Ltd., 1963).

Conversion Factors

Rice data include Okinawa from 1900-1944, exclude it from 1945-1973, and include it from 1974-1981.

Data are recorded in: calendar years, January-December

fiscal years, April-March 31

rice years, November 1-October 31.

In Japan, production and sometimes prices as well are recorded in brown or unhusked rice. Since most other countries report in paddy or milled form, comparison is difficult. Rough conversion factors are provided for conversion from one form to another.

Brown rice x 1.25 = paddy

Milled rice x 1.37 = paddy

Brown rice x 0.91 = milled rice

Paddy x 0.73 = milled rice

1 koku (石)<sup>\*</sup> brown rice = 150 kg. = .15 mt.

1 mt. brown rice = 6.67 koku

1 koku paddy = 187.5 kg. = .1875 mt.

1 mt. paddy = 5.33 koku

1 koku rice = 136.5 kg. = .1365 mt.

1 mt. rice = 7.33 koku

1 koku = 100 sho = 6.48 cubic shaku = 47.66 American gallons = 180.39 liters

1 sho = 0.01 koku

1 sho rice = 1.43 kg.

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\*The koku (石) was a very popular volume measure for rice. Conversion factors listed here are approximate equivalents in terms of weight.

1 kan (貫) = 6.25 kin = 3.75 kg.

1 kin (斤) = 0.16 kan = .6 kg.

1 kg. = .27 kan = 1.67 kin

1 picul = 100 kin = 60 kg.

1 cho (町) = 10 tan = 2.45 acres = 0.99 ha.

1 ha. = 10.08 tan = 1.01 cho

1 tan (反) = 0.1 cho = 0.10 ha.

1 tan = 300 tsubo = 0.10 ha.

1 tsubo (坪) = .00333 tan = 3.31 m<sup>2</sup>

### Money Unit

1,000 rin = 100 sen = 1 yen

In 1980 1 US\$ = 203.00 yen official exchange rate

In 1980 1 US\$ = 224.33 yen free-market exchange rate

#### IV, V, VI. KOREA

##### South Korean Rice Statistics

In the post-World War II period, Korea was partitioned into a Northern and a Southern half. In the following section, however, only the agricultural statistical system of South Korea is described. No attempt has been made to discuss the North Korean system since virtually nothing is known about statistical collection in the North. In fact, due to an almost total absence of published sources of series data, USDA rice data are presented as a proxy in the North Korean table. It is unlikely that USDA data are very accurate as they are based on scattered information, although general trends are probably reflected.

The post-World War II statistical system of South Korea is basically organized around a decentralized bureaucracy. The Bureau of Statistics under the Economic Planning Board is responsible for the compilation and publication of general statistics, and for the population census. It also serves as a consulting agency for other ministerial-level statistical bodies. Specific statistics are collected and compiled by separate ministries, with agricultural statistics being collected by the Ministry of Agriculture and Fisheries and several other organizations directly affiliated with agricultural production. A statistical bureau within the ministry coordinates activities carried out by the local provincial offices. Data are collected at the local (kun) level by more than 1,500 regular trained enumerators. The statistical bureau of the Ministry of Agriculture and Fisheries is also responsible for the planning, organization, and completion of the decennial agricultural census. Other organizations involved in the collection of agricultural statistics include the Office of Rural Development, the National

Agricultural Cooperative Federation (NACF), and the National Agricultural Economic Research Institute. NACF conducts regular surveys during which farm wage and price data are collected. NACF data are the main primary source for wages and farm prices in the ROK table.

Statistics for rice area are compiled annually based on "eye estimations" produced by local enumerators and using a sample survey of area conducted in 1965 by the Ministry of Agriculture and USAID/Korea as a benchmark. Area is generally reported in jeongbo and is for net area sown (harvested area is occasionally reported) excluding the area of bunds. Prior to 1965 and the completion of the Ministry of Agriculture sample survey of field areas, area estimates were based on the 1918 Japanese cadastral area survey. As a result of the 1965 survey, post-World War II data were found to consistently underestimate paddy area by about five percent. For further discussion of the problem of over- and under-reporting, see: Ban, Moon, Perkins, Rural Development Studies in the Modernization of The Republic of Korea: 1945-1975 (Cambridge, Mass.: Council on East Asian Studies, Harvard University, 1980), pp. 394-396.

Rice yields are collected by sample survey and are used in conjunction with area to calculate production. Prior to 1966, an administrative reporting system was used to obtain rice yields. Subsequent use of the more objective sample survey crop-cutting method resulted in much higher output estimates (on average 32.37 percent greater). Official statistics have been adjusted back to 1955 (see ROK Table) to account for this discrepancy. Rice yields are based on actual harvested quantities after threshing, drying, and husking. Grain production was reported in sŏk, the traditional Korean volume measure for rice, but the metric ton is now in general use. In addition to the crop-cutting survey performed by the Ministry of Agriculture, yield estimates are

also produced by the Production-Cost Survey (PCS). The PCS is based on a sample of 1,200 grain farmers who keep detailed records with the help of trained enumerators. PCS numbers tend to be lower than those obtained through the random sample survey. Most analysts use the Ministry estimates because they assume that since the Ministry closely supervises the collection of data, these data are more likely to be accurate. For more information, see: Pal Yong Moon and Byong Seo Yoo, "A Review of the Crop Production Estimates and Key Statistics Related to Grain Policy (Korea)" (Seoul: Korea Development Institute, 1974), p. 5.

TABLE IV

PRE-WAR KOREA (A)	Cultivated area '000' ha	Rice prod'n milled '000' mt	Rice area '000' ha	Rice yield milled mt/ha	Rice area irrig. '000' ha	Rice imports milled '000' mt
Year	1	2	3	4	5	6
1910	2445	1420	1342(B)	1.06		1
1911	2683	1579	1387	1.14		5
1912	2823	1483	1405	1.06		4
1913	2862	1653	1445	1.14		89
1914	2935	1929	1472	1.31		38
1915	3144	1753	1486	1.18		4
1916	3560	1902	1506	1.26		3
1917	3843	1868	1516	1.23		9
1918	4459	2088	1535	1.36		11
1919	4485	1735	1525	1.14		6
1920	4458	2031	1543	1.32		8
1921	4496	1955	1519	1.29		3
1922	4482	2049	1545	1.33		25
1923	4506	2071	1538	1.35		18
1924	4530	1804	1563	1.15		7
1925	4534	2017	1572	1.28	758	133
1926	4564	2089	1575	1.33		91
1927	4570	2361	1589	1.49		8
1928	4570	1844	1505	1.23		75
1929	4594	1870	1619	1.16		99
1930	4608	2618	1648	1.59	953	78
1931	4618	2167	1661	1.30		9
1932	4624	2231	1630	1.37		15
1933	4816	2483	1683	1.48		16
1934	4887	2282	1698	1.34		22
1935	4877	2441	1681	1.45	1152	38
1936	4901	2650	1588	1.67		26
1937	4903	3650	1626	2.25		25
1938	4917	3295	1646	2.00		9

TABLE IV (cont'd)

PRE-WAR KOREA	Rice exports milled '000' mt	Population '000' persons	Wholesale rice price milled avg. yen/mt	Retail rice price milled avg. yen/mt	Farm wage rate male yen/day
Year	7	8	11	12	13
1910	112	13313(C)			
1911	183	14056			
1912	179	14827			
1913	279	15459			
1914	189	15930			
1915	354	16278	80	90	
1916	230	16648	96	101	
1917	228	16969	107	143	
1918	306	17057	167	221	
1919	394	17150	285	322	
1920	284	17289	397	315	
1921	483	17453	182	208	
1922	433	17627	252	242	
1923	559	17885	186	225	
1924	673	18068	273	272	0.35
1925	653	19016	295	308	0.41
1926	795	19104	269	286	0.88
1927	883	19138	245	264	0.76
1928	962	19190	210	227	0.76
1929	794	19331	210	227	0.77
1930	704	20257	181	191	0.73
1931	1234	20263	121	132	0.58
1932	1023	20600	153	161	0.55
1933	1085	20791	152	161	0.56
1934	1355	21126	175	183	0.61
1935	1231	21891	213	227	0.65
1936	1214	22048		220	
1937	1065	22355		230	
1938	1375	22634		240	

TABLE IV (cont'd)

PRE-WAR KOREA Year	Domestic apparent per capita rice availability kg/cap/yr	Wet rice area '000' ha	Wet rice production milled '000' mt	Wet rice yields milled mt/ha	Cultivated ha/person
	14	15	16	17	18
1910	107	1245	1327	1.07	.18
1911	112	1279	1470	1.15	.19
1912	100	1301	1384	1.06	.19
1913	107	1340	1549	1.16	.19
1914	121	1368	1810	1.32	.18
1915	108	1377	1641	1.19	.19
1916	114	1401	1789	1.28	.21
1917	110	1414	1759	1.24	.23
1918	122	1433	1970	1.37	.26
1919	101	1424	1707	1.20	.26
1920	117	1442	1919	1.33	.26
1921	112	1420	1847	1.30	.26
1922	116	1448	1940	1.34	.25
1923	116	1442	1961	1.36	.25
1924	100	1465	1713	1.17	.25
1925	106	1477	1916	1.30	.24
1926	109	1480	1984	1.34	.24
1927	123	1493	2244	1.50	.24
1928	96	1411	1750	1.24	.24
1929	97	1524	1780	1.17	.24
1930	129	1553	2498	1.61	.23
1931	107	1566	2066	1.32	.23
1932	108	1539	2129	1.38	.22
1933	119	1592	2377	1.49	.23
1934	108	1608	2134	1.36	.23
1935	112	1591	2339	1.47	.22
1936	120	1518	2562	1.69	.22
1937	164	1563	3553	2.27	.22
1938	146	1583	3206	2.03	.22

Notes to Appendix Table IV: Pre-War Korea

A/ Pre-war rice data in this table include both North and South Korea. Data were collected under the direction of the Japanese Governor General's office, as Korea was a Japanese colony from 1910 through the conclusion of World War II. It should be noted, however, that more than 70 percent of rice area was located in the South, although the North had a larger population. The North did produce large amounts of foodgrains (about 50 percent of total output) including millets, sorghum, corn, buckwheat, and beans, which were more adapted to the North's harsher, cooler climate. The Japanese made a deliberate attempt to shift food consumption patterns away from rice to millets and other lesser grains. Although the South produced large amounts of rice, much of the crop was exported to Japan. Northern foodgrain output was an important and primary domestic food source.

B/ In 1918, the colonial government completed an extensive land survey of Korea. Using 1918 as a benchmark, 1910-1917 area statistics were revised by the government. The revised statistics are recorded here.

C/ Population figures include Koreans and "foreigners" residing in Korea in addition to Japanese. Pre-war Korean population data are based on two sources: quinquennial censuses and annual registrations of household members. After the Japanese formally annexed Korea in 1910, they introduced registration. In 1925, the first census was held, and this was repeated every five years on a regular basis until the last census in 1944. Census data are generally believed to be more accurate than registration figures. Population estimates for the pre-war period have been recalculated using census figures as benchmarks. For further discussion, see Sung-chul Suh, Growth and Structural Changes in the Korean Economy, 1910-1940 (Cambridge, Mass.: Council on East Asian Studies, Harvard

University, 1970), pp. 39-43).

Estimates of Annual Population ('000' persons)

1910	14766	1928	19889
1911	15002	1929	20187
1912	15242	1930	20438
1913	15486	1931	20785
1914	15743	1932	21138
1915	15958	1933	21497
1916	16213	1934	21862
1917	16472	1935	22208
1918	16736	1936	22474
1919	17004	1937	22744
1920	17264	1938	23017
1921	17609	1939	23293
1922	17961	1940	23547
1923	18320	1941	23924
1924	18686	1942	24307
1925	19020	1943	24696
1926	19305	1944	25133
1927	19595		

Alternate population estimates calculated by Suh using census figures as benchmarks; Sung-chul Suh, Growth and Structural Changes in the Korean Economy (p. 41).

D/ 1937: In 1936, the official method for collecting rice production statistics was changed from reliance on reports filed by village clerks concerning crop conditions in their particular villages to actual surveys of rice production. The results of the first survey indicated that previous data were subject to substantial underreporting. Apparently, since tenant rent payments were frequently based on the productivity of the land under cultivation, there was a distinct incentive to underreport on the part of tenant farmers. Based on this assumption, attempts have been made to revise rice output figures for the years 1910-1936. For further discussion of the methodology and revisions, see: Sung-chul Suh, Growth and Structural Changes in the Korean Economy, 1910-1940 (Cambridge, Mass.: Council on East Asian Studies, Harvard University), pp. 17-20.

Sources of Data for Appendix Table IV: Pre-War Korea

1. Cultivated Area

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

2. Rice Production

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

3. Rice Area

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

4. Rice Yield

1910-1938: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1925-1935: Yujiro Hayami, "Green Revolution in Historical Perspective: The Experience of Japan, Taiwan and Korea," draft; original source: Chōsen tochikairyō jigyō yōran (Summary Report of Korean Land Improvement Projects).

6. Rice Imports

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

7. Rice Exports

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

8. Population

1910-1938: Republic of Korea. Ministry of Agriculture and Fisheries, Yearbook of Agriculture and Forestry Statistics (Seoul).

11. Average Wholesale Rice Price

1915-1935: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

12. Average Retail Rice Price

1915-1924: Hoon K. Lee, Land Utilization and Rural Economy in Korea (New York: Greenwood Press, 1969), p. 263; original source: Annual Statistical Report, 1930, p. 220.

1925-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

13. Male Farm Wage Rate

1924-1935: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

14. Domestic Apparent Per Capita Rice Availability

1910-1938: Domestic availability is calculated by dividing rice production (2) by population (8) on an annual basis.

15. Wet Rice Area

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

16. Wet Rice Production

1910-1938: Chōsen. Chōsen Sōtokufu (Governor General), Chōsen tōkei nempō (Annual Statistical Report of Chōsen) (1923-1938).

17. Wet Rice Yields

1910-1938: Wet rice yields are calculated by dividing wet rice production (16) by wet rice area (15) on an annual basis.

TABLE V

NORTH KOREA	Arable area '000' ha	Rice production paddy '000' mt	Rice area harvested '000' ha	Rice yields paddy mt/ha
Year	1	2	3	4
1945		1033(A)	367(A)	2.81
1946	1845(B)	1052	385	2.73
1947		1105	416	2.66
1948		1368	436	3.14
1949	1967(B)	1158	379	3.06
1950		1250	378	3.31
1951		936	377	2.48
1952		1094	403	2.71
1953	1949	1229	428	2.87
1954		1040	448	2.32
1955		1240	451	2.75
1956	1833(B)	1392	489	2.85
1957	1891(B)	1459	496	2.94
1958	1908	1562	500	3.12
1959		1515	476	3.18
1960	1897(B)	1535(D)	500(D)	3.07(D)
1961		1671	520	3.21
1962		1807	540	3.35
1963		1943	560	3.47
1964	1894	2079	580	3.58
1965	1950	2215	600	3.69
1966	1950	2351	620	3.79
1967	1950	2487	640	3.89
1968	2000	2622	660	3.97
1969	2000	2758	680	4.06
1970	2000	2894	700	4.13
1971	2050	3029	700	4.33
1972	2050	3166	709	4.47
1973	2100	3301	718	4.60
1974	2100	3500	727	4.81
1975	2150	3700	736	5.03
1976	2170	4150	745	5.57
1977	2210	4610	754	6.11
1978	2220	4150	764	5.43
1979	2230	4500	773	5.82
1980	2240	4000	783	5.11
1981		4300	793	5.42
1982		4200	795	5.28

TABLE V (cont'd)

NORTH KOREA	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Domestic apparent per capita rice availability kg/cap/yr	Cultivated ha/person
Year	6	7	8	14	18
1946	-	22(D)	9257	114	.20
1947					
1948					
1949			9622	120	.20
1950			9196(C)	136	
1951			8510	110	
1952			8294	132	
1953			8422	146	.23
1954			8661	120	
1955			8990	138	
1956			9310	150	
1957			9613	152	.20
1958			9925	157	.20
1959			10252	148	.19
1960	-	22(D)	10605(E)	145	
1961	-	-	10930	153	.18
1962	-	-	11214	161	
1963	-	-	11497	169	
1964	-	44	11816	176	.16
1965	-	72	12200	182	.16
1966	-	125	12596	187	.15
1967	-	60	12978	192	.15
1968	-	96	13369	196	.15
1969	-	89	13770	200	.14
1970	-	103	13892(F)	208	.14
1971	-	88	14272	212	.14
1972	-	96	14660	216	.14
1973	-	286	15053	219	.14
1974	-	328	15451	227	.13
1975	-	89	15853	233	.13
1976	-	269	16252	255	.13
1977	-	412	16656	277	.13
1978	-	234	17061	243	.13
1979	-	284	17473	258	.13
1980	-	200	17892	224	
1981	-	250	18317	235	
1982	-	300			

Notes to Appendix Table V: North Korea

A/ 1945-1959: These numbers are official claims or derived from Korean official statements or claims by the USDA.

B/ 1946-1960: Although these figures were given as "sown" area in the original source, they coincide with the "arable land" series published in the other sources consulted (see: "Total Arable Area and Land Under Permanent Crops").

C/ 1950-1959: Population is as of July 1 of the year in question.

D/ 1960-1982: The year used here is a simple calendar year, January-December.

E/ 1950-1969: Population figures are as of July 1 of the year in question. 1967-1969 are projected population and based on data reported by U.S. Bureau of the Census, Foreign Demographic Analysis Division, Washington, D.C. (FDAD).

F/ 1970-1981: Population estimates are a revised series based on the United Nations 1981 medium variant population estimates, and projections and growth rates. Population growth is estimated to be about 2.4 percent on an annual basis.

Sources of Data for Appendix Table V: North Korea

A quick glance at the accompanying table will show that official Korean rice data are not readily available. This problem is, however, not limited to rice alone, but to all other facets of the economy of the DPRK as well. In fact, it is not even known for sure whether rice production is reported in milled or paddy form. Thus, the statistics used here are, for the most part, estimates derived by staff at USDA.

1. Total Arable Area

1946-1960: Statistical Compilation of the Economic Development of the Democratic People's Republic of Korea (P'yongyang: 1961).

1957: Razvitie narodnogo khoziaistva i kulturey koreiskoi narodno-demokraticeskoi respubliki (Moscow: 1959).

1953, 1958: JPRS 2691 May 1960 microfilm. "Information from the 1959 North Korean Yearbook."

1964-1980: Food and Agriculture Organization of the United Nations, FAO Production Yearbook (Rome: 1947-1981).

2. Rice Production

1945-1959: Personal communication from Marion R. Larsen, Asia Branch, International Economics Division, Economics, Statistics and Cooperatives Service, U.S.D.A., Washington, D.C., July, 1980.

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

3. Rice Area

1945-1959: Personal communication from Marion R. Larsen, Asia Branch, International Economics Division, Economics, Statistics and Cooperatives

Service, U.S.D.A., Washington, D.C., July, 1980.

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

4. Rice Yields

1945-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

6. Rice Imports

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

7. Rice Exports

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1946-1949: Joseph Sang-Moon Chung, The North Korean Economy (Stanford: Hoover Institution Press, 1974).

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington, D.C.: 1978).

1960-1969: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics, 1950-79 (Washington, D.C.: 1980).

1970-1981: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates for Countries with a Population of 10 Million or More: 1981 (Washington, D.C.: 1981).

14. Domestic Apparent Per Capita Paddy Availability

1946-1981: Domestic apparent per capita paddy availability is calculated by dividing rice production (2) by population (8) on an annual basis.

TABLE VI

SOUTH KOREA	Area of cultivated land(B) '000' ha	Rice production (A) milled '000' mt	Rice area (A) harvested '000' ha	Rice yields milled (A) mt/ha	Rice area irrigated '000' ha
Year	1	2	3	4	5
1945	2067	1848	1046	1.77	
1946	1901	1735	1098	1.58	
1947	1854	1994	1114	1.79	
1948	2028	2230	1112	2.01	
1949	2053	2122	1044	2.03	
1950	1954	2103	1089	1.93	
1951	1942	1634	915	1.79	
1952	1943	1337	808	1.65	535(G)
1953	1940	2036	1069	1.90	
1954	1950	2160	1069	2.02	
1955	1995	2959(H)	1080	2.74(H)	
1956	1992	2438	1097	2.22	539
1957	1999	3002	1105	2.72	566
1958	2012	3161	1108	2.85	587
1959	2016	3150	1113	2.83	629
1960	2025	3047	1121	2.72	664
1961	2033	3463	1128	3.07	665
1962	2063	3015	1139	2.65	682
1963	2080	3758	1155	3.25	684
1964	2072	3954	1195	3.31	686(M)
1965	2256	3501	1228	2.85	701
1966	2293	3919	1231	3.18	729
1967	2312	3603	1235	2.92	744
1968	2319	3195	1151	2.78	746
1969	2311	4090	1220	3.35	983
1970	2297	3939	1203	3.27	1021
1971	2271	3998	1190	3.36	1022
1972	2242	3957	1191	3.32	1028
1973	2241	4212	1182	3.56	1042
1974	2238	4445	1204	3.69	1050
1975	2240	4669	1218	3.83	1065
1976	2238	5215	1215	4.29	1082
1977	2231	6006	1230	4.88	1104
1978	2222	5797	1230	4.71	1121
1979	2207	5565	1233	4.51	
1980	2196	3550	1233	2.88	
1981	2188	5063	1224	4.14	
1982		5175	1188	4.36	

TABLE VI (cont'd)

SOUTH KOREA	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price (B) rice 10 won/mt	Procurement price (A) rice 10 won/mt
Year	6	7	8	9	10
1946	-				
1947	12				
1948	-				
1949	-				3(E)
1950	2		21147(F)		3
1951	-		21178		21
1952	16		21250		82
1953	156		21365		251
1954	9		21566		251
1955	1		21863		385
1956	3	-	22350		488
1957	198	-	22938		1324
1958	5	-	23590		1324
1959	-	5	24328		1324
1960	-	26	25142(K)	1374(L)	1324
1961	-	4	25984	1639	1324
1962	-	60	26802	2033	1938
1963	117	5	27605	2158	2063
1964	-	13	28388	3438	2575
1965	-	19	29130	4278	3709
1966	18	40	29863	4013	3938
1967	139	-	30614	4233	4135
1968	247	-	31389	4663	4488
1969	631	-(A)	32176	5488	5250
1970	770	-	32976	6794	6438
1971	1007	-	33793	7633(O)	8750
1972	624	-	34600	9614	10938
1973	337	-	35336	12205	12360
1974	365	-	36027	12784	14221
1975	483	-	36669	18478	19700
1976	180	-	37276	23369	24375
1977	65	80	37893	28149	29000
1978	2	-	38514	31124	32825
1979	241	-	39144	36493	37500
1980	907	-	39782	49700(Q)	
1981		-	40430		
1982		100			

TABLE VI (cont'd)

SOUTH KOREA	Wholesale (B) rice price milled avg. 10 won/mt	Retail rice price (B) milled main market Seoul 10 won/mt	Farm wage rate won/day	Domestic apparent per capita rice availability kg/cap/yr
Year	11	12	13	14
1945	2(C)	2(D)		
1946	5	5		
1947	8	8		
1948	11	12		
1949	12	12		
1950	32	80		99
1951	161	152		77
1952	583	571		63
1953	606	605		95
1954	492	531		100
1955	1183	1260		135
1956	1857	1969		109
1957	1993(I)	2262		131
1958	1642	1863		134
1959	1450	1668	98(J)	129
1960	1714	1905	96	121
1961	2113	2298	106	133
1962	2215	2362	115	112
1963	3309	3771	143	136
1964	4347	4611	199	139
1965	4164(N)	4392	221	120
1966	4274	4560	256	131
1967	4688	4945	307	118
1968	5361	5750	381	102
1969	6425	6736	463	127
1970	7230	7895	579	119
1971	8941	9705	695	118
1972	12305	13490	803	114
1973	12160	13541	886	119
1974	15219	18713	1141	123
1975	24751	24879	1467	127
1976	27794		1903	140
1977	30245		2350	158
1978	35245		3393	151
1979	46944		5042(P)	142
1980	59579			89
1981				125

TABLE VI (cont'd)

SOUTH KOREA	Main rice crop area harvested (A) '000' ha	Main rice crop prod'n. milled (A) '000' mt	Main rice crop yield milled (A) mt/ha	Cultivated ha/person
Year	15	16	17	18
1950				.09
1951				.09
1952	805	1335	1.66	.09
1953	1066	2033	1.91	.09
1954	1065	2158	2.03	.09
1955	1077	2957(H)	2.75(H)	.09
1956	1093	2436	2.23	.09
1957	1101	3000	2.27	.09
1958	1104	3158	2.86	.08
1959	1109	3148	2.84	.08
1960	1117	3044	2.73	.08
1961	1124	3459	3.08	.08
1962	1134	3011	2.66	.08
1963	1149	3752	3.27	.07
1964	1181	3941	3.34	.07
1965	1199	3464	2.89	.08
1966	1199	3871	3.23	.08
1967	1204	3572	2.97	.07
1968	1127	3166	2.81	.07
1969	1198	4057	3.39	.07
1970	1184	3907	3.30	.07
1971	1178	3975	3.37	.07
1972	1178	3933	3.34	.06
1973	1170	4190	3.58	.06
1974	1189	4417	3.71	.06
1975	1198	4627	3.86	.06
1976	1196	5180	4.33	.06
1977	1208	5965	4.94	.06
1978				.06
1979				.06
1980				.05
1981				.05

Notes to Appendix Table VI: South Korea

A/ In the Republic of Korea, the rice year runs from November through October. In this table, data are recorded under the first year in the sequence, that is, 1964/65 data are recorded under 1964. The reader may find other sources where this is reversed.

B/ Figures are recorded on a calendar-year basis.

C/ 1945-1956: Wholesale rice prices is a Seoul, main-market price for first grade rice.

D/ 1945-1975: Retail rice price is a Seoul, main-market price for first grade rice.

E/ In 1948, the newly formed government of South Korea chose to continue the American military government's policy of requiring producers to sell all rice over and above household needs to the government. In 1950, this policy was revamped to allow a dualistic system of free marketing and government control of rice under the Grain Management Law. The government procures rice during or after the rice harvest in November-March. The government generally procures between 25 and 40 percent of the total marketed. Rice procurements are distributed to select groups such as the army, prisoners and welfare groups, used to build up rice stocks, and for market injection to reduce seasonal price swings. Procurement prices as compared to free-market farm-harvest prices have varied through time, but generally the government has offered low prices relative to the free market in the 1950 through mid-1960s period and prices higher than or close to free-market prices from the late 1960s to the present. Rice is collected by the National Agricultural Cooperative Federation (NACF), which also distributes fertilizer, credit and other necessary inputs, but the rice procurement program is implemented by the Ministry of Agriculture and Fisheries.

F/ 1950-1959: Population is as of July 1 of the year in question.

G/ 1952-1978: Rice area irrigated figures include completely irrigated area and area benefited by an irrigation association, but partially irrigated and rainfed areas are excluded.

H/ 1955-1982: In 1965, a substantial change in data collection procedures for rice was enacted resulting in a 32 percent increase in output. Prior to 1965, output data was collected under an administrative reporting system. In 1965, the sample survey method of data collection for rice was initiated. Subsequently, the series was adjusted back to 1955 to account for this change.

I/ 1957-1964: Wholesale rice price is an average market price for domestic first grade rice.

J/ 1959-1979: Farm wage rate is for male farm laborers, and includes wages paid in cash and in kind on a daily basis.

K/ 1960-1981: Population figures are as of July 1 of the year in question. 1976-1981 are projected estimates based on the Oct. 1, 1975 census.

L/ 1960-1970: Farm-harvest price is an average calendar-year price for polished rice.

M/ 1964-1978: Irrigation figures are revised.

N/ 1965-1980: Wholesale rice price is for polished medium rice.

O/ 1971-1980: Farm price is for polished rice of Grade B. Prices are weighted monthly averages of all markets.

P/ 1979: Farm wage rate is an average of January-October only.

Q/ 1980: Farm-harvest price is an average of July-October only.

Sources of Data for Appendix Table VI: South Korea

1. Area of Cultivated Land

1945-1948: Sung Hwan Ban, Pal Yong Moon, and Dwight H. Perkins, Rural Development: Studies in the Modernization of the Republic of Korea: 1945-1975 (Cambridge, Mass.: Council of East Asian Studies, Harvard University, 1980), p. 417.

1949-1951: Bank of Korea, Economic Statistics Yearbook (Seoul).

1952-1959: Republic of Korea. Ministry of Agriculture and Forestry, Yearbook of Agriculture and Forestry Statistics (Seoul).

1960-1979: Bank of Korea, Economic Statistics Yearbook (Seoul).

1980-1981: Yonhap News Agency, Korea Annual 1983 (Seoul: Chung Chong-shik, 1983).

2. Rice Production

1945-1976: Republic of Korea. Ministry of Agriculture and Forestry, Yearbook of Agriculture and Forestry Statistics (Seoul).

1977-1980: Bank of Korea, Economic Statistics Yearbook (Seoul).

1981: Yonhap News Agency, Korea Annual 1983 (Seoul: Chung Chong-shik, 1983).

1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FC-26-83 (Washington, D.C.: 1983).

3. Rice Area

1945-1951: Republic of Korea. Ministry of Agriculture and Forestry, Food Crop Statistics (Seoul).

1952-1976: Republic of Korea. Ministry of Agriculture and Forestry, Yearbook of Agriculture and Forestry Statistics (Seoul).

1977-1980: Bank of Korea, Economic Statistics Yearbook (Seoul).

1981: Yonhap News Agency, Korea Annual 1983 (Seoul: Chung Chong-shik, 1983).

1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

4. Rice Yields

1945-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1952-1978: Republic of Korea. Ministry of Agriculture and Forestry, Yearbook of Agriculture and Forestry Statistics (Seoul). \* Name later changed to Ministry of Agriculture and Fisheries.

6. Rice Imports

1946-1980: Bank of Korea, Economic Statistics Yearbook (Seoul).

7. Rice Exports

1955-1968: Bank of Korea, Economic Statistics Yearbook (Seoul).

1969-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington, D.C.: 1978).

1960-1969: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1950-79 (Washington, D.C.: 1980).

1970-1981: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates for Countries with a Population of 10 Million or More: 1981 (Washington, D.C.: 1981).

9. Farm-Harvest Price

1959-1970: National Agricultural Cooperative Federation, Farm Price Statistics Summary 1959-1970 (Seoul).

1971-1977: Republic of Korea. Ministry of Agriculture and Fisheries, Yearbook of Agriculture and Forestry Statistics (Seoul).

1978-1980: The National Agricultural Cooperative Federation, The Agricultural Cooperatives Survey (Seoul).

10. Procurement Price

1949-1967: Republic of Korea. Ministry of Agriculture and Forestry, Grain Statistics Yearbook and Cost of Production Survey, 1962-1975 (Seoul).

1968-1979: Republic of Korea. Ministry of Agriculture and Fisheries, Yearbook of Agriculture and Forestry Statistics (Seoul).

11. Average Wholesale Price

1945-1980: Bank of Korea, Economic Statistics Yearbook (Seoul).

12. Retail Rice Price (Main Market)

1945-1964: Bank of Korea, Economic Statistics Yearbook (Seoul).

1965-1973: Republic of Korea. Economic Planning Board, Monthly Statistics of Korea (Seoul).

1974-1975: Sung Hwan Ban, Pal Yong Moon, and Dwight Perkins, Rural Development Studies in the Modernization of the Republic of Korea: 1945-1975 (Cambridge, Mass.: Council on East Asian Studies, Harvard University, 1980), p. 249; original source: BOK: Price Survey.

13. Farm Wage Rate

1959-1979: The National Agricultural Cooperative Federation, The Agricultural Cooperatives Survey (Seoul).

14. Domestic Apparent Per Capita Rice Availability

1950-1981. Domestic rice availability is calculated by dividing rice production (2) by population (8) on an annual basis.

15. Main Rice Crop Area

1952-1977: Republic of Korea. Ministry of Agriculture and Forestry,  
Yearbook of Agriculture and Forestry Statistics (Seoul).

16. Main Rice Crop Production

1952-1977: Republic of Korea. Ministry of Agriculture and Forestry,  
Yearbook of Agriculture and Forestry Statistics (Seoul).

17. Main Rice Crop Yield

1952-1977: Main rice crop yield is calculated by dividing main rice crop  
production (16) by main rice crop area (15) on an annual basis.

Country Sources of Basic Data: Korea

Pre-War Korea

Primary statistical data for pre-war Korea were collected by the  
Japanese. Thus, original source material is printed in Japanese only.

1. Chōsen Sōtokufu (Governor General of Korea), Chōsen tōkei nempō  
(Statistical Yearbook of Korea).
2. Chōsen Ginkō (Bank of Korea), Tokai geppō (Bulletin of Monthly Statistics).
3. Chōsen Sōtokufu (Governor General of Korea), Chōsen bōeki nempyō (Trade  
Yearbook of Korea).

North Korea

Primary statistical data for North Korea are not available except for  
occasional translations into English of Korean materials by U.S. government  
translation services such as JPRS.

1. Pyŏngyang Korean Central News Agency, Choson chungang yongam (Korean Central Yearbook)--excerpts occasionally available in English translation.

#### South Korea

1. Republic of Korea. Ministry of Agriculture and Forestry, Yearbook of Agriculture and Fishery Statistics (Seoul). Formerly Yearbook of Agriculture and Forestry Statistics.
2. Republic of Korea. The National Agricultural Cooperative Federation, The Agricultural Cooperatives Survey.
3. Republic of Korea. Ministry of Agriculture and Forestry, Food Crop Statistics (Seoul).
4. Republic of Korea. Ministry of Agriculture and Forestry, Report on the Results of Farm and Household Economy Survey and Production Cost Survey of Agricultural Products (Seoul).
5. Bank of Korea, Economic Statistics Yearbook (Seoul).
6. Bank of Korea, Monthly Economic Statistics (Seoul).

#### Useful Secondary Sources

##### Pre-War Korea

1. Seizo Katō, Kankoku nōgyō ron (A Discussion on Korean Agriculture) (Tokyo: 1904). A history of the land tenure system in Korea.
2. Sung-chul Suh, Growth and Structural Changes in the Korean Economy, 1910-1940 (Cambridge, Mass.: Council on East Asian Studies, Harvard University, 1978).

North Korea

1. Joseph Sang-Moon Chung, The North Korean Economy (Stanford: Hoover Institution Press, Stanford University, 1974).
2. Ellen Brun and Jacques Hersh, Socialist Korea: A Case Study in the Strategy of Economic Development (New York: Monthly Review Press, 1976).
3. Frederica M. Bunge, ed., Area Handbook Series, North Korea: A Country Study (Washington, D.C.: U.S. Sup't of Documents, 1981).

South Korea

1. Pal Yong Moon, "A Brief Review of the Evolution of Rice Policy in Korea" (Seoul: Korea Development Institute, 1974).
2. Pal Yong Moon and Byong Seo Yoo, "A Review of the Crop Production Estimates and the Key Statistics Related to Grain Policy" (Seoul: Korea Development Institute, 1974).
3. Hoon, K. Lee, Land Utilization and Rural Economy in Korea (New York: Greenwood Press, Publishers, 1969).
4. Sung Hwan Ban, Pal Yong Moon, and Dwight H. Perkins, Rural Development, in the book series Studies in the Modernization of the Republic of Korea: 1945-1975, edited by Edward S. Mason and Mahn Je Kim (Cambridge, Mass.: Council on East Asian Studies, Harvard University, 1980).

Money Unit

South Korea = won

In 1980 1 US\$ = 659.90 won official exchange rate

In 1980 1 US\$ = 625.00 won free-market exchange rate

Conversion Factors

Pre-1945 Korea

Area

1 cho = .99174 ha.

1 danbo (tanbo) = .099174 ha.

Volume

1 liter = .005543 seok (suk)

1 picul = 60.47867 kg.

100 liters = .5543 seok

1 koku = .1365 kg.

100 liters = 79.8192 kg. rice

1 koku = .1875 mt. rice

1 mt. = 16.53 piculs

1 koku = .150 mt. brown rice

Area

1 danbo (tanbo) = 0.1 jeongbo (chungbo) = 0.099174 ha.

1 jeongbo = 10 danbo = 0.99174 ha.

1 hectare = 10.083 danbo = 1.0083 jeongbo

Volume

1 seok (suk) polished rice = 144 kg. = .144 mt.

1 seok foreign rice = 144 kg. = .144 mt.

1 seok unpolished (brown) rice = 155 kg. = 155 mt.

1 seok paddy = 100 kg. = .100 mt.

1 mt. = 6.9444 seok polished rice

100 liters = 79.8264 kg. rice

100 liters = .55435 seok rice

200 liters = 1.087 seok rice

20 liters = .11087 seok rice

20 liters = 15.96528 kg. = .01596258 mt. rice

100 liters = 79.8264 kg. = .0798264 mt. rice

200 liters = 159.6528 kg. = .1596528 mt. rice

Weight

1 mt. = 266.666 gwan

1 gwan (kwan) = .00375 mt.

Glossary of Japanese Terms Used in the Pre-1945 Period

- 百斤 - picul  
籾 - momi - unhulled rice, paddy  
粳米 - uruchi - ordinary, non-glutinous rice  
糯米 - mochigome - glutinous rice  
陸米 - upland, dry rice  
玄米 - genmai - brown rice  
斤 - kilogram  
精 - shō - white rice  
相場 - wholesale rice  
物價 - average retail price  
耕地面積 - cultivated surface area

Administrative Units in South Korea

Province (9) - to

County (138) - kun

Town, formerly the county seat (138)

Township - myŏn

Subcounties (group of villages - about 10/myŏn) - tong

village (about 27/tong) - ri. There are about 36,405 villages in South Korea.

hamlet - purak

SOUTHEAST ASIA

VII.	Indochina	117
VIII.	Kampuchea	125
IX.	Laos	134
X.	Vietnam	141
XI.	North Vietnam	150
XII.	South Vietnam	156
XIII.	Java and Madura	173
XIV.	Indonesia	190
XV.	Malaya	208
XVI.	West Malaysia	216
XVII.	Sabah	228
XVIII.	Sarawak	237
XIX.	Philippines	250
XX.	Thailand	276
XXI.	Burma	301

## VII. INDOCHINA

### Rice Statistics in Indochina

After the French established nominal control over most of Indochina, they organized official agencies to collect statistics. Service de la Statistique Générale was the main body responsible for the collection and aggregation of general statistics. Specific statistical coverage varied widely from region to region, but probably the most reliable statistics were collected for Cochinchine because of direct French rule. Annam, Tonkin, and Cambodge, as French protectorates, had less direct and more erratic statistical coverage. Statistics for Laos are unavailable or are of poor quality. Generally, statistics are available in a disaggregated form for each region and for Indochina as a whole.

Statistics pertaining to rice area and production were collected by local governments and aggregated by l'Office Indochinois du Riz and l'Inspection Générale de l'Agriculture, de l'Elevage et des Forêts. L'Office du Riz was an administrative body drawn from persons involved in the growing, processing, and export of rice and as such was oriented toward the export of rice. The central office was located in Saigon in Cochinchine, the major port through which rice exports passed, with lesser offices scattered throughout Indochina.

The quality of rice statistics is generally poor, with great year-to-year variability in reporting. In addition, no statistics for outlying regions such as Laos were collected. Estimates for rice area and production were irregularly released in quintals of paddy for first and second crop rice area, production and yield by province, by region, and for Indochina as a whole. Production and area statistics were reported in June-May crop years.

Because of the commercial interest of the French in rice, long-term export price series are available for several cities and for three varieties of

export rice on a monthly basis. Prices were collected from the Chambers of Commerce of Saigon and the syndicate of exporters of Saigon and Haiphong by government officials. These statistics were published in annual statistical journals such as the Annuaire Statistique de l'Indochine.

TABLE VII

INDO- CHINA	Rice prod'n. milled '000' mt	Rice area planted '000' ha	Rice yield milled mt/ha	Rice imports milled '000' mt	Rice exports milled '000' mt
Year	2	3	4	6	7
1900		1175(B)		-	999(C)
1901				-	999
1902				-	1110
1903				-	667
1904				-	961
1905				-	622
1906				-	739
1907				-	1428
1908				-	1235
1909				-	1095
1910				-	1277
1911				-	830
1912	3000	3050	0.98	-	819
1913	3650	3870	0.94	-	1287
1914	4320	4230	1.02	-	1419
1915	3590	3970	0.90	-	1373
1916	3050	4110	0.74	-	1345
1917	2860	4120	0.69	-	1367
1918	2860	4120	0.69	-	1620
1919	2960	4810	0.62	-	967
1920	2850	4760	0.60	-	1188
1921	3600	4850	0.74	-	1720
1922	3460	5000	0.69	-	1441
1923	3270	4620	0.71	-	1340
1924	3540	4760	0.74	-	1230
1925	3610	5070	0.71	-	1520
1926	3740	5180	0.72	-	1597
1927	4010	5450	0.74	-	1666
1928	3550	5490	0.65	-	1798
1929	3670	5680	0.65	-	1472
1930	3690	5830	0.63	-	1122
1931	3470	5300	0.65	-	960
1932	3580	5470	0.65	-	1081
1933	3600	5380	0.67	-	1131
1934	3400	5340	0.64	-	1372
1935	3730	5460	0.68	-	1530
1936	3900	5640	0.69	-	1781
1937	3890	5580	0.70	-	1547
1938	4200	6010	0.70	-	930
1939				-	1440
1940	4960	6000	0.83	-	1477
1941				-	974
1942	4507	6171	0.73	-	
1943	3847	5497	0.70	-	421
1944	3695	5503	0.67	-	267
1945				-	74

TABLE VII (cont'd)

INDO- CHINA Year	Population '000' persons	Export rice price (A) milled avg. piaster/mt	Export rice price (A) milled Saigon piaster/mt	Domestic apparent per capita rice availability kg/cap/yr
	8	11	12	14
1900			32(D)	
1901			31	
1902			35	
1903			46	
1904			33	
1905	15859		42	
1906			34	
1907			37	
1908			39	
1909			34	
1910			38	
1911			46	
1912			56	
1913			60	
1914			56	
1915			60	
1916			57	
1917			49	
1918	18800		152	
1919			110	
1920			115	
1921	20301(E)		78	177
1922			76	
1923		90(F)	89	
1924		102	102	
1925		100	96	
1926	20500	104	104	182
1927		101	97	
1928		92	89	
1929		108	111	
1930		119(G)	113(H)	
1931	21452(E)	81	67	162
1932		65	55	
1933		52	41	
1934		43	33	
1935		44	42	
1936		52	50	
1937	23030	79	79	169
1938		102	106	
1939		89	93	
1940		116	132	
1941		131	105	
1942	25500	152	102	177
1943	26582	126(I)	117	145
1944	25269	106	155	146
1945		386	500	

Notes to Appendix Table VII: Indochina

A/ Numbers under columns 11 and 12 are prices in the respective markets for rice destined for export, except for 1930-1945 main-market (Saigon) rice price, which is a prix de gros mensuels (monthly wholesale price).

B/ 1900: This is rice area cultivated for Cochinchine only. Cochinchine was the major rice exporting region of French Indochina and the area over which French control was most complete. In 1937, 2,200,000 ha. of rice area were cultivated in Cochinchine.

C/ 1900-1945: Rice exports cover rice in all forms, including rough rice, cargo rice, white rice, rice meal, and brisures.

D/ 1900-1929: Saigon market (Cochinchine) price is an export price for white No. 2 rice.

E/ Census figure.

F/ 1923-1929: Average rice price is for white No. 2 rice and is an average of Saigon and Hanoi prices.

G/ 1930-1942: Average rice price is for Saigon white No. 1, 25 percent brokens and Haiphong No. 1 rices.

H/ 1930-1945: Main-market (Saigon) wholesale rice price is for 25 percent brokens.

I/ 1943-1945: Average rice price is for white 25 percent brokens rice and is an average of Phnom-penh and Saigon prices.

Sources of Data for Appendix Table VII: Indochina

1. Arable Area

No yearly statistics are available, however, rice occupied about four-fifths of total cultivated area excluding permanent tree crops. Thus, total cultivated area was probably about 6,000,000 ha.

2. Rice Production

1912-1938: Wickizer, V. D. and Bennett, M. K., Rice Economy of Monsoon Asia (Stanford University, Calif.: Food Research Institute, 1941).

1940-1944: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient, 1940-1944).

3. Rice Area

1900: Robequain, Charles, The Economic Development of French Indochina (New York: Oxford University Press, 1944).

1912-1938: Wickizer, V. D. and Bennett, M. K., Rice Economy of Monsoon Asia (Stanford University, Calif.: Food Research Institute, 1941).

1940-1944: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient, 1940-1944).

4. Rice Yield

1912-1944: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

6. Rice Imports

No net imports made.

7. Rice Exports

1900-1912: Brenier, Henri, Essai d'atlas statistique de l'Indochine française

(Hanoi-Haiphong: Imprimerie d'Extrême-Orient, 1914).

1913-1929: Indochina. Inspection Générale des Mines et de l'Industrie, Statistique générale de l'Indochine résumé rétrospectif 1913-1929 (Hanoi: Imprimerie d'Extrême-Orient, 1931).

1930-1945: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient, 1930-1945).

#### 8. Population

1905-1945: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient, 1918-1945).

1921-1926: Indochina. Inspection Générale des Mines et de l'Industrie, Statistique générale de l'Indochine résumé rétrospectif 1913-1929 (Hanoi: Imprimerie d'Extrême-Orient, 1931).

#### 11. Average Export Rice Price

1923-1945: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient, 1923-1946).

#### 12. Export Rice Price

1900-1912: Brenier, Henri, Essai d'atlas statistique de l'Indochine française (Hanoi-Haiphong: Imprimerie d'Extrême-Orient, 1914).

1913-1929: Indochina. Service de la Statistique Générale, Résumé statistique relatif aux années, 1913-1940 (Hanoi: Imprimerie d'Extrême-Orient, 1941).

#### 14. Domestic Apparent Per Capita Rice Availability

1918-1944: Domestic rice availability is calculated by dividing rice production (2) by population (8) on a yearly basis.

Country Sources of Basic Data: Indochina

1. Indochina. Service de la Statistique Générale, Bulletin économique de l'Indochine (Saigon: begins publication in 1898).
2. Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).
3. Brenier, Henri, Essai d'atlas statistique de l'Indochine française (Hanoi-Haiphong: Imprimerie d'Extrême-Orient, 1914).
4. Indochina. Inspection Générale des Mines et de l'Industrie, Statistique générale de l'Indochine résumé rétrospectif 1913-1929 (Hanoi: Imprimerie d'Extrême-Orient, 1931).
5. Indochina. Service de la Statistique Générale, Résumé statistique relatif aux années, 1913-1940 (Hanoi: Imprimerie d'Extrême-Orient, 1941).

Useful Secondary Sources

1. Teston, Eugene and Percheron, Maurice, L'Indochine historique: Encyclopédie administrative, touristique, artistique et économique (Paris: Librairie de France, 1931).
2. Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford University, Calif.: Food Research Institute, 1941).
3. Gourou, Pierre, L'Utilisation du sol en Indochine française (Paris: Centre d'Etudes de Politique, Etrangère, Travaux des Groupes d'Etudes No. 14, 1947).
4. Robequain, Charles, Economic Development of French Indochina (New York: Oxford University Press, 1944).

Important Conversion Factors

1 picul paddy = 68 kg. paddy  
money unit = piastre  
milling rate = .62 white rice  
.78 cargo rice

## VIII. KAMPUCHEA

### Rice Statistics in Kampuchea

Administratively, Kampuchea is divided into provinces (khet) and municipalities, districts (srok), and village groups (khum). The number of provinces has varied between 14 and 17 through time. Rice statistics have, at times, been available down to the province level, although basic collection is probably carried out at the district level.

Post-war statistical collection has, in general, been spotty and uneven in quality. During Sihanouk's reign (1953-1970), the Agricultural Statistics Department in the Directorate of Agriculture collected basic area and production figures for rice and corn. At the national level, these statistics were published in the annual publication, Annuaire statistique. However, the Vietnam war and the unstable condition of Kampuchean governments seriously disrupted statistical collection. Since 1971, there has been no systematic statistical collection. Although daily life under the Vietnamese has begun to return to normal for most Kampuchean, no official statistics have yet been published.

Rice area is generally reported in hectares and rice production in metric tons. At first, statistics were only collected for the main (first) crop (rice production 1940-1948, rice area 1940-1959), but with subsequent improvements in data collection, statistics for both the main and secondary rice crops were collected. Unfortunately, this has made it impossible to compare rice area and production series over time (see Kampuchean table and footnotes for further information).

TABLE VIII

KAMPUCHEA	Arable area '000' ha	Rice prod'n. paddy '000' mt	Rice area harvested '000' ha	Rice yield (A) paddy mt/ha	Rice imports (B) milled '000' mt
Year (A)	1	2	3	4	6
1940		954(C)	961(D)	0.99	-
1941		718(F)	762(F)	0.94(F)	-
1942		838	814	1.03	-
1943		652	807	0.81	-
1944		1054	948	1.11	-
1945		574	886	0.65	-
1946		674	891	0.76	-
1947		900	984	0.91	-
1948		962	1015	0.95	-
1949		1645(J)	1029	1.60	-
1950		1829	1085	1.69	-
1951		1588	1180	1.35	-
1952		1893	1112	1.70	-
1953		2107	1175	1.79	-
1954		3256	1221	2.67	-
1955		2209	1000	2.21	-
1956		2492	1234	2.02	-
1957		2557	1227	2.08	-
1958		2191	1522	1.44	-
1959	2500(M)	2805	1612	1.74	-
1960		2383(N)	2182(N/O)	1.09(N)	-
1961	2353	2039	2286	0.89	-
1962		2622	2333	1.12	-
1963	2938	2760	2377	1.16	-
1964	2984	2500	2344	1.07	-
1965	2938	2376	2182	1.09	-
1966	2983	2457	2020	1.22	-
1967	2984	3251	2324	1.40	-
1968	3050	2503	1944	1.29	10
1969	3133	3814	2399	1.59	1
1970	3046	2732	1880	1.45	20
1971	3046	2138	1545	1.38	92
1972	3046	1929	1548	1.25	157
1973	3046	1051	811	1.30	225
1974	3046	635	555	1.14	350
1975	3046	1500	1050	1.43	-
1976	3046	1800	1400	1.29	-
1977	3046	1800	1500	1.20	-
1978	3046	1500	1400	1.07	200
1979	3046	538	774	0.70	317
1980	3046	1563	1443	1.08	125
1981		1448	1317	1.10	60
1982		1800	1450	1.24	25

TABLE VIII (cont'd)

KAMPUCHEA	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price paddy riel/mt	Wholesale rice price milled main market Phnom-penh riel/mt
Year	7	8	9	11
1940				140(E)
1941		3471(G)		115
1942				102
1943				135
1944				157
1945				290
1946		4137		732
1947				1800
1948				2010
1949				2550
1950		4163(K)		2300
1951	416(L)	4266		2260
1952	477	4371		3330
1953	825	4478		3750
1954	114	4589		3370
1955	248	4702		3790
1956	670	4827		
1957	775	4956		2740
1958	781	5088		3370
1959	811	5224		3570
1960	239	5364(P)		3910
1961	131	5511		4530
1962	378	5663		5010
1963	491	5818	1900	4890
1964	473	5978	2235	4800
1965	166	6142	2429	4800
1966	200	6315	2515	4800
1967	194	6494	2537	4800
1968	91	6677	3203	4800
1969	178	6866	3184	5180
1970	32	7060		6110
1971	18	7133		6270
1972	-	7201		
1973	-	7270		
1974	-	7334(Q)		
1975	-	6726		
1976	20	6191		
1977	19	6012		
1978	-	5899		
1979	-	5767		
1980	-			
1981	-			
1982	-			

TABLE VIII (cont'd)

KAMPUCHEA	Retail rice price milled main market Phnom-penh riel/mt	Domestic apparent per capita paddy availability kg/cap/yr	Arable ha per person
Year	12	14	18
1940			
1941			
1942			
1943			
1944			
1945			
1946	1400(H/I)		
1947	2000		
1948	2695		
1949	2750		
1950		439	
1951		372	
1952		433	
1953	4420	471	
1954		710	
1955		470	
1956	4270	516	
1957	4000	516	
1958	4600	431	
1959	4500	537	.48
1960	4800	444	
1961	5300	370	.43
1962	5700	463	
1963	6000	474	.50
1964	5000	418	.50
1965	5200	387	.48
1966	5300	389	.47
1967	5900	501	.46
1968	6400	375	.46
1969	9900	555	.46
1970	8000	387	.43
1971	12000	300	.43
1972		268	.42
1973		145	.42
1974		87	.41
1975		223	.45
1976		291	.49
1977		266	.51
1978		58	
1979		70	
1980			

Notes to Appendix Table VIII: Kampuchea

A/ 1940-1982: Rice yields reported here are not comparable across time because different data were used for the periods 1940-1948 and 1960-1982. 1940-1948 yields are for main (first) crop only. 1949-1959 yields cannot be computed because rice production statistics are for total production whereas area statistics are for first crop area only. 1960-1982 yields are computed from total rice production and total rice area.

B/ Kampuchea is traditionally a net exporter of rice. Rice imports did not begin until constant war disrupted the production of rice.

C/ 1940-1948: First crop rice production only reported.

D/ 1940-1959: Area for first crop only reported.

E/ 1940-1971: Wholesale rice price is for white No. 1, 25 percent broken rice.

F/ 1941-1945: Production figures do not include Battambang.

G/ 1941: The total population was estimated at 2803 thousand in 1931, 2403 thousand in 1921, and 1102 thousand in 1900.

H/ 1946-1947: Retail rice price is for December only.

I/ 1946-1971: Retail rice price is for white No. 1 rice.

J/ From 1949, production for both crops reported. This is why paddy production increases dramatically in 1949.

K/ 1950-1959: Population is as of July 1 of the year in question.

L/ 1951-1971: Rice exports are for rice and rice products.

M/1959-1980: Arable area is reported in calendar years. FAO numbers used in this table are obvious guesstimates.

N/1960-1982: Rice area, production, and yield are reported in calendar years.

O/1960-1982: From 1960, area for both first and second crops reported. This is why rice area jumps so drastically in 1960.

P/1960-1979: Population figures are as of July 1 of the year in question. All years are projected estimates. A census taken in 1962 counted 5,728,771 persons (unadjusted).

Q/1974-1979: Since 1974, the Kampuchean population has actually had a negative growth rate because of harsh living conditions produced by constant war. Population estimates for 1980 will likely show a small increase from the 1979 estimate as living conditions have probably improved.

Sources of Data for Appendix Table VIII: Kampuchea

1. Arable Land

1959-1980: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations). \*

2. Rice Production

1940-1971: République Khmère. Institut National de la Statistique et des Recherches Economiques, Commissariat au Plan, Annuaire statistique (Phnom-penh).

1972-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

3. Rice Area

1940-1971: République Khmère. Institut National de la Statistique et des Recherches Economiques, Commissariat au Plan, Annuaire statistique (Phnom-penh).

1972-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

4. Rice Yields

1940-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

Although all Kampuchean rice is grown under wet-land (paddy) conditions, technically irrigated area is very small, probably no more than a few thousand hectares.

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\* Statistical Yearbook for Asia and the Pacific replaces Statistical Yearbook for Asia and the Far East in 1972.

6. Rice Imports

1940-1959: République Khmère. Institut National de la Statistique et des Recherches Economiques, Commissariat au Plan, Annuaire statistique (Phnom-penh).

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

7. Rice Exports

1951-1959: République Khmère. Institut National de la Statistique et des Recherches Economiques, Commissariat au Plan, Annuaire statistique (Phnom-penh).

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1941, 1946: Tan Kim-Huon, Géographie du Cambodge de l'Asie des moussons et des principales puissances (Phnom-penh: 1963).

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington: 1978).

1960-1979: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1950-79 (Washington, D.C.: 1980).

9. Farm-Harvest Price

1963-1969: République Khmère. Institut National de la Statistique et des Recherches Economiques, Commissariat au Plan, Annuaire statistique (Phnom-penh).

11. Wholesale Rice Price Main Market (Phnom-penh)

1940-1971: République Khmère. Institut National de la Statistique et des

Recherches Economiques, Commissariat au Plan, Annuaire statistique  
(Phnom-penh).

12. Retail Rice Price Main Market (Phnom-penh)

1946-1971: République Khmère. Institut National de la Statistique et  
des Recherches Economiques, Commissariat au Plan, Annuaire statistique  
(Phnom-penh).

14. Domestic Apparent Per Capita Paddy Availability

1950-1979: Domestic apparent rice availability is calculated by dividing  
rice production (2) by total population (8) on an annual basis.

Country Sources of Basic Data: Kampuchea

1. République Khmère. Institut National de la Statistique et des Recherches  
Economiques, Commissariat au Plan, Annuaire statistique (Phnom-penh).

Useful Secondary Sources

1. D. Whitaker et al., Area Handbook for the Khmer Republic (Washington, D.C.:  
Foreign Area Studies, American University, 1973).
2. D. Steinberg, Cambodia (New Haven: HRAF Press, 1957).

Important Conversion Factors

Money Unit

1 riel\* = 100 sen

1 picul = 68 kg.

14.7059 piculs = 1 mt.

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\* The riel was created in the 1950s with the establishment of an independent Kampuchean banking and currency system. Prior to World War II, the Indochinese piaster was in circulation. It was issued by the private Banque de l'Indochine and was linked to the French franc.

## IX. LAOS

### Rice Statistics in Laos

Administratively, Laos is divided into provinces (khoueng), districts (muong), cantons (tasseng), and villages (ban). The statistical system in Laos, which is structured around these divisions, is very undeveloped. Even figures for glutinous rice output, Laos' most important and major crop, are scarce and available only at the national level. Little is known about the current organization of statistical collection, but a Vietnamese-style system is probably in use. Formerly a statistical section, Service de la Statistique du Laos under the Ministère du Plan was responsible for the collection of all statistics, including those pertaining to agriculture. Unfortunately, repeated disruptions prevented the regular collection and publication of statistics. Bulletin de statistiques du Laos was published for a ten-year period (1959-1969) on a quarterly basis, and a few issues of the annual Statistique essentielles were published in the late 1960s and early 1970s. However, data in these publications are sketchy and incomplete on a year-to-year basis. The USDA and FAO provide regular estimates of rice output and area in Laos, which many people prefer to use, but these numbers must be viewed as rough estimates only. In addition, US/AID reports from the 1960s provide some useful statistics.

Rice output and area statistics are reported in metric tons and hectares on a national basis only in the official statistics. There is no breakdown between glutinous and ordinary rice, but most rice, perhaps 90 percent, is of the glutinous variety. Official irrigated rice area statistics are not available, but most guesses range in the 2 to 8 percent range. Rice price statistics are not generally available except in index form, although researchers and observers have recorded scattered prices in urban areas. Laos does not export rice. Import figures were available from the Lao Customs Service, but currently are rarely made public.

TABLE IX

LAOS	Arable area '000' ha	Rice prod'n. paddy (A) '000' mt	Rice area harvested '000' ha	Rice yield paddy	Irrigated land area '000' ha	Rice imports milled '000' mt
Year	1	2	3	4	5	6
1945						
1946						
1947		560	800	0.70		
1948						
1949						
1950						-(B)
1951						-
1952						1
1953		680	730	0.93		3
1954		520	650	0.80		7
1955		620	665	0.93		16
1956		560	680	0.82		24
1957		560	670	0.84		11
1958		500	696	0.72		-
1959		520	647	0.80		3
1960		500(F)	627(F)	0.80(F)		88
1961	1000	540	620	0.87		112
1962	1000	510	590	0.86		126
1963		520	600	0.87		83
1964	800	735	916	0.80		39
1965	800	740	916	0.81		31
1966	850	754	930	0.81		38
1967	900	811	960	0.84		33
1968	950	771	656	1.18		47
1969	950	895	665	1.35		42
1970	842(G)	904	665	1.36	17	62
1971	842	812	665	1.22	19	80
1972	842	817	665	1.23	25	64
1973	842	883	665	1.33	30	51
1974	848	905	686	1.32	35	21
1975	848	885	660	1.34	40	120
1976	849	858	680	1.26	50	100
1977	853	851	690	1.23	60	94
1978	865	795	665	1.20	78	70
1979	865	868	689	1.26	78	53
1980	880	1052	732	1.44	115	50
1981		1154	739	1.56		10
1982		1180	740	1.59		20

TABLE IX (cont'd)

LAOS	Population '000' persons	Average retail price glutinous rice - Kip/kg	Farm wage rate Kip/day	Domestic apparent per capita paddy availability kg/cap/yr	Arable ha/person
Year	8	12	13	14	18
1945					
1946	1189				
1947	1169				
1948				479	
1949					
1950	1949(C)				
1951	1986				
1952	2023				
1953	2063				
1954	2103			330	
1955	2146			247	
1956	2190			289	
1957	2236			256	
1958	2284		5(D)	250	
1959	2333	10(E)		219	
1960	2382			223	
1961	2434			210	
1962	2486			222	.41
1963	2539			205	.40
1964	2595			205	
1965	2652			283	.31
1966	2711			279	.30
1967	2772			278	.31
1968	2834			293	.32
1969	2898			272	.34
1970	2962			309	.33
1971	3027			305	.28
1972	3092			268	.28
1973	3159			264	.27
1974	3229			280	.27
1975	3303			280	.26
1976	3381			268	.26
1977	3462			254	.25
				246	.25

Notes to Appendix Table IX: Laos

A/ Glutinous rice (khao neo) is the primary crop in Laos and the preferred foodgrain of the majority of Laotians. Non-glutinous rice (khao chao) is grown only as a secondary crop.

B/ 1950-1982: Rice imports are almost all glutinous rice, which is preferred by most Laotians. Laos does not export rice.

C/ 1950-1977: Population is as of July 1 of the year in question. All reported figures are projected estimates as there is no census data available from Laos. These estimates are based on UN population estimates, UN unpublished tables, and estimates and projections as reported in United Nations, Population Division, Working Paper No. 56 (UNWP56).

D/ 1957: Farm wage rate is an average salary a Laotian farmer pays to a Laotian villager for seasonal agricultural labor.

E/ 1959: Retail glutinous rice price is an average of Vientiane, Phong Savanah, Thakhek, Attopeu, Saravane, and Pakse prices.

F/ 1960-1982: USDA uses a calendar year January-December, while Laotian sources report agricultural statistics in crop years.

G/ 1970: The drop in arable area in 1970 from 950,000 ha. to 842,000 ha. does not reflect an actual decline in arable area. Rather, different years of the annual publication, Statistical Yearbook for Asia and the Pacific, use very different estimates. The arable area series in the newest edition (1981) only carries back to 1970. What this does show is that statistical information for Laos is very sketchy and imprecise. The apparent declining trend from the early 1960s through the early 1970s is probably valid, however, because of the negative effects of the Indochinese conflict on Laos.

Sources of Data for Appendix Table IX: Laos

1. Arable Area

1961-1980: Economic and Social Commission for Asia and the Pacific,  
Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations).

2. Rice Production

1947: Indochina: Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1953-1957: Royaume du Laos, Ministère du Plan, Service de la Statistique du Laos, Annuaire statistique du Laos 1953-1957 (Vientiane: 1961).

1958-1959: U.S. Agency for International Development, Mission to Laos,  
Laos Quarterly Statistical Report.

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular,  
FG-26-83 (Washington, D.C.: 1983).

3. Rice Area

1947: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1953-1957: Royaume du Laos, Ministère du Plan, Service de la Statistique du Laos, Annuaire statistique du Laos 1953-1957 (Vientiane: 1961).

1958-1959: Economic and Social Commission for Asia and the Pacific,  
Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations).

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular,  
FG-22-82 (Washington, D.C.: 1983).

4. Rice Yield

1947-1982: Yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Irrigated Land

1970-1980: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations, 1980).

6. Rice Imports

1950-1954: Halpern, Joel Martin, "Laotian Agricultural Statistics," Laos Project, Paper No. 9, April 1961.

1955-1959: Royaume du Laos, Ministère du Plan, Service de la Statistique du Laos, Annuaire statistique du Laos 1953-1957 (Vientiane: 1961).

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1946-1947: Halpern, Joel Martin, "Population Statistics and Associated Data," Laos Project, Paper No. 3, March 1961, Table 9, p. 8.

1950-1977: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington, D.C., 1978).

12. Average Retail Glutinous Rice Price

1959: Quarterly Statistical Bulletin of the United States Operations Mission to Laos, No. 4, 1959.

13. Farm Wage Rate

1957: Halpern Joel Martin, "Economic and Related Statistics Dealing with Laos," Laos Project, Paper No. 11.

14. Domestic Apparent Per Capita Paddy Availability

1947-1977: Calculated by dividing paddy production (3) by population (8) on an annual basis.

Country Sources of Basic Data\* : Laos

1. Rovaume du Laos, Ministère du Plan, Service de la Statistique du Laos, Annuaire statistique du Laos 1953-1957 (Vientiane: 1961).
2. Royaume du Laos, Service National de la Statistique, Bulletin de statistique du Laos (Vientiane). Quarterly, published 1959-1969.
3. Royaume du Laos, Service National de la Statistique, Statistiques essentielles (Vientiane).

Useful Secondary Sources

1. Sweet, Norma, "Fact Book - Compilation of Laotian Statistics" (Vientiane: 1967).
2. Halpern, Joel, Economy and Society of Laos, A Brief Survey, Monograph Series No. 5, South East Asia Studies (New Haven: Yale University, 1964).
3. Halpern, Joel, "Economic and Related Statistics Dealing with Laos," Laos Project, Paper No. 11. Xerox.
4. Halpern, Joel, "Population, Statistics and Associated Data," Laos Project, Paper No. 3, March 1961. Xerox.
5. Halpern, Joel, "Laotian Agricultural Statistics," Laos Project, Paper No. 9, April 1961. Xerox.
6. A.I.D., "Quarterly Statistical Bulletin of the United States Operations Mission to Laos" (various issues).

Conversion Factors

Money Unit: kip

1 touque rice = @ 16 kg.

1 kalon rice = @ 16 kg.

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\* Presently, as in many communist countries, no official statistical publications are issued. The situation will probably improve with time.

X, XI, XII: VIETNAM

Rice Statistics in Vietnam

Since Vietnam has only been unified for a very brief period since World War II, a discussion of statistical collection in Vietnam must take into account the statistical systems of South Vietnam, North Vietnam, and Vietnam since the end of the Vietnam war. The greatest volume of statistics are available for South Vietnam. The North, under the communists, was relatively secretive, and little information was released to the West. It is also likely that the North, with less access to foreign aid, produced far less statistical data than the South, which counted on substantial aid from U.S./A.I.D. for the development of primary statistical collection in the rural areas. Since 1975, Vietnam has also been rather slow in releasing data for public consumption. Data that have been released have tended to be in the form of percentage increments over preceding years. Data from divergent sources have tended to contradict one another, but this is to be expected in a country that must deal with the massive task of economic, social, and political reorganization that Vietnam currently faces.

Rice area and output statistics in South Vietnam were based on cadastral surveys and annual surveys of planted area and production carried out by extension and Agricultural Economics and Statistics Service personnel and governmental and private institutions. Crop cutting, rather than personal interview, later became more important, especially under the auspices of A.I.D. personnel who were very active in South Vietnam. More detailed information on data collection methods may be found in an FAO report, "Rapport sur l'enquête par sondage sur la superficie agricole et la production du paddy au sud et au centre Viet-nam campagne 1959-1960," by J.G.W. Ignatius.

Paddy output and area statistics are easily available at the regional and

provincial levels. Since double cropping is quite prevalent, some information is also available on area and output attributed to first and second crops. Due to French influence, metric units were used, and paddy production is reported in rough form. Agricultural statistics are reported in split, agricultural years while the calendar year is commonly used for prices and trade data.

The availability of statistics for Vietnam since 1975 is, if anything, worse than that for North Vietnam. Almost no statistics are made public, except those leaked to visitors. Statistical collection is going on under the control of the General Statistical Office, but apparently is as yet in a nascent stage. More statistics will eventually be made public, and hopefully the Vietnamese will begin the publication of regular statistical materials. However, for now, most researchers must depend on USDA or FAO estimates and on the release of occasional information.

TABLE X

VIETNAM	Arable area	Rice production	Rice area	Rice yield
Year	'000' ha	paddy '000' mt	'000' ha	paddy mt/ha
	1	2	3	4
1950		5410(A)	3750(A)	1.44(A)
1951		5680	3919	1.45
1952		5006	3440	1.46
1953		4884	3549	1.38
1954		5566	4085	1.36
1955		6362	4911	1.30
1956		7548	4824	1.56
1957		7140	4911	1.45
1958		8812	4526	1.95
1959		10285	4674	2.20
1960		9168	4602	1.99
1961		9258	4763	1.94
1962		9746	4889	1.99
1963		9623	4962	1.94
1964		9697	4983	1.95
1965		9332	4759	1.96
1966	4814	8435	4612	1.83
1967	4840	8688	4566	1.90
1968	4937	8166	4644	1.76
1969	4959	9115	4630	1.97
1970	5048	9915	4631	2.14
1971	5195	9825	4425	2.22
1972	5289	11008	4900	2.25
1973	5441	10700	5065	2.11
1974	5500	11023	5112	2.16
1975	5600	10539	4940	2.13
1976	6206	11827	5297	2.23
1977	6571	12076	5468	2.21
1978		12265	5462	2.25
1979		13934	5462	2.55
1980		11678(F)	5544	2.11
1981		12569	5630	2.23
1982		13900	5700	2.44

TABLE X (cont'd)

VIETNAM	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Procurement price paddy dong/mt
Year	6	7	8	10
1950			27072(B)	
1951			27477	
1952			27888	
1953			28305	
1954			28793	
1955			29357	
1956			29999	
1957			30725	
1958			31540	
1959			32392	
1960	12(A)	182(A)	33283(C)	
1961	52	90	34214	
1962	10	330	35189	
1963	20	60	36208	
1964	170	6	37217	
1965	449	13	38212	
1966	775	3	39191	
1967	703	2	40152	
1968	900	20	41091	
1969	1075	18	42036	
1970	600	3	42984	
1971	910	3	43935	
1972	760	-	44889	
1973	865	-	45845	
1974	640	1	46792	
1975	805	2	47728	
1976	265	6	48751	
1977	150	5	49922	
1978	250	-	50969	
1979	135	-	52127	
1980	140	5		
1981	130	15		560(G)
1982	75	160		

TABLE X (cont'd)

VIETNAM	Retail rice price milled dong/mt	Farm wage rate dong/day	Domestic apparent per capita paddy availability kg/cap/yr	Arable ha/person
Year	12	13	14	18
1950			200	
1951			207	
1952			180	
1953			173	
1954			193	
1955			217	
1956			252	
1957			232	
1958			279	
1959			318	
1960			275	
1961			271	
1962			277	
1963			266	.12
1964			261	.12
1965			244	.12
1966		178(D)	215	.12
1967		234	216	.12
1968		280	199	.12
1969		365	217	.12
1970		467	231	.12
1971		598	224	.12
1972		665	245	.12
1973		972	233	.12
1974		1039	236	.12
1975		3(E)	221	.12
1976		3	243	.13
1977		5	242	.13
1978		10	241	
1970		20	267	
1980		30		
1981	5000(H)	30		

Notes to Appendix Table X: Vietnam

A/ 1950-1982: Year runs from January-December.

B/ 1950-1959: Population is as of July 1 of the year in question.

C/ 1960-1979: Population is as of July of the year in question. 1976-1979 population figures are projected estimates based on April 1, 1974 census of North Vietnam and February 6, 1976 census of South Vietnam.

D/ 1966-1974: Farm wage rate is for unskilled male farm labor only.

E/ 1975-1981: In 1975, a new currency, the dong, was released. One dong was set equal to 500 old piasters.

F/ 1930-1982: Rice production estimates of USDA differ considerably from official Vietnamese estimates.

G/ 1981: Vietnam, a communist society, is currently in the process of collectivizing agricultural production. Most land in North Vietnam is under collective control while only about 25 percent has been successfully collectivized in the South. Farmers are offered fixed procurement prices for their rice, with special above quota prices available to those who produce more than their quota share. However, a black market in rice continues to thrive, where peasants might receive as much as ten times the price the government is paying for quota rice. Production remained stagnant and actually declined in some parts of the south, the rice bowl of Vietnam. In 1980, a piecework or contract system much like that currently in use in China was initiated to encourage individuals to increase rice output. Under this system, peasants were allowed to dispose of a portion of their harvest on the free market. The contract system was enthusiastically accepted in the North, where record harvests were reaped in 1982.

Procurement price is the quota price paid by the government to farmers for ordinary grade (coarse) paddy. The above quota price for ordinary rice is 2750 dong/mt., considerably higher than the quota price. The quota price for good quality (fine) paddy is 670 dong/mt., and the above quota price is 3000 dong/mt.

H/1981: Retail rice price is the free "black" market price for ordinary grade rice. The government also supports the price of rice in urban areas for select groups, including employees of the government. The support price is set at 450 dong/mt. However, only limited amounts of rice (13 kg./month) may be bought at the subsidized price.

Sources of Data for Appendix Table X: Vietnam

1. Arable Area

1966-1974: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations).  
1975-1977: General Statistical Office, Hanoi, Vietnam, 1979.

2. Rice Production

1950-1959: Personal communication from Marion R. Larsen, Asia Branch, International Economics Division, U.S. Department of Agriculture, Economics, Statistics and Cooperatives Service.  
1960-1974 and 1980-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).  
1975-1979: General Statistical Office, Hanoi, Vietnam, 1979.

3. Rice Area

1950-1959: Personal communication from Marion R. Larsen, Asia Branch, International Economics Division, U.S. Department of Agriculture,

Economics, Statistics and Cooperative Service.

1960-1974 and 1980-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

1975-1979: General Statistical Office, Hanoi, Vietnam, 1979.

4. Rice Yield

1950-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

6. Rice Imports

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

7. Rice Exports

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington, D.C.: 1978).

1960-1979: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1900-1979 (Washington, D.C.: 1980).

10. Procurement Price

1981: General Statistical Office, Hanoi, Vietnam.

12. Retail Rice Price

1981: General Statistical Office, Hanoi, Vietnam.

13. Farm Wage Rate

1966-1974: Economic and Social Commission for Asia and the Pacific,

Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations).

1975-1981: General Statistical Office, Hanoi, Vietnam.

14. Domestic Apparent Per Capita Paddy Availability

1950-1979: Paddy availability is calculated by dividing rice production

(2) by population (8) on an annual basis.

TABLE XI

NORTH VIETNAM (A) Year	Cultivated area '000' ha	Rice prod'n. paddy '000' mt	Rice area '000' ha	Rice yield paddy mt/ha	Rice area irrig. '000' ha	Rice imports milled '000' mt
	1	2	3	4	5	6
1950		3200	2100	1.52		
1951		3100	2050	1.51		
1952		3000	2000	1.50		
1953		2800	1950	1.44		
1954		3000	2000	1.50		
1955	1600	3523	2176	1.62		
1956		4136	2284	1.81		
1957		3948	2192	1.80	638(C)	
1958		4577	2235	2.05		
1959		5193	2274	2.28		
1960	2036	4212	2284	1.84	2024(D)	10
1961		4651	2410	1.93	2256	10
1962		4542	2410	1.88	2088	10
1963		4296	2364	1.82	2157	20
1964		4512	2426	1.86		40
1965	2225	4511	2330	1.94		15
1966		4100	2317	1.77		25
1967		4000	2270	1.76		25
1968		3800	2250	1.69		25
1969		4000	2200	1.82		30
1970	1700(E)	4200	2120	1.98		30
1971		3500	1800	1.94		30
1972		4660	2200	2.12		-
1973	2200(E)	4100	2200	1.86		-
1974		4840	2250	2.15		-
1975		4400	2300	1.91		136
1976						215
1977						250

TABLE XI (cont'd)

NORTH VIETNAM (A) Year	Rice exports milled '000' mt	Population '000' persons	Farm wage rate piaster/day	Domestic apparent per capita paddy availability kg/cap/yr
	7	8	13	14
1948		4689		
1949			21	
1950			21	
1951		9851	23	315
1952			26	
1953			40	
1954				
1955		13570		260
1956		14040		295
1957		14530		272
1958		15030		305
1959		15550		334
1960	28	16100		262
1961	6	16600		280
1962	7	17200		264
1963	11	17900		240
1964	3	18500		244
1965	13	19000		237
1966	3	19420		211
1967	2	19850		202
1968	20	20280		187
1969	18	20720		193
1970	-	21150		199
1971	-	21600		162
1972	-	22000		212
1973	-			
1974	-			
1975	-			
1976	-			
1977	-			

TABLE XI (cont'd)

NORTH VIETNAM (A) Year	Main rice crop area (B) 10th month autumn rice '000' ha	Main rice crop production (B) 10th month autumn rice-paddy '000' mt	Main rice crop yield (B) 10th month autumn rice-paddy mt/ha	Cultivated ha/person
	15	16	17	18
1955		2360		
1956		2552		
1957		2475		
1958		3353		
1959		3426		
1960	1366	2941	2.15	.13
1961	1399	2798	2.00	
1962	1380	2797	2.03	
1963	1357	2611	1.92	
1964				
1965				.12
1966				
1967				
1968				
1969				
1970				.08

Notes to Appendix Table XI: North Vietnam

A/ The Democratic Republic of Vietnam did not, apparently, have the extensive statistical system that the South did. Statistics that were collected were seldom made public and are practically unavailable in the West. Price statistics are especially lacking. In 1975, with the end of the war, North and South were joined together.

B/ Traditionally, two rice crops are grown each year, the main 10th month or autumn crop (va mna) planted in May-June and harvested in October-November, and the secondary fifth month or winter crop (vu chiem) planted in October-November and harvested in May-June. The North, in an attempt to increase output per hectare (as there is very little new land that can be reclaimed), introduced an additional spring and summer crop, but these are relatively unimportant.

C/ 1957: Rice area irrigated includes 270,000 ha. command area under large projects and 368,000 ha. irrigated by smaller works.

D/ 1960-1964: Irrigated area figures are probably inflated.

E/ 1970 and 1973: Cultivated area figures estimated by G. Nguyen Tien Hung.

Sources of Data for Appendix Table XI: North Vietnam

1. Cultivated Area

1955-1973: G. Nguyen Tien Hung, Economic Development of Socialist Vietnam 1955-1980 (New York: Praeger Publishers, 1977), pp. 4-5.

2. Rice Production

1950-1975: Personal communication from Marion L. Larsen, Asia Branch, International Economics Division, U.S., Department of Agriculture, Economics, Statistics, and Cooperatives Service. Data are based on

official data released by DRVN and on estimates derived by the USDA.  
1955, 1957, 1960-1963, and 1972-1973: Democratic Republic of Vietnam.  
Vietnamese Studies (Hanoi: Xunhasaba), No. 13 (1967) and No. 44 (1976).

3. Rice Area

1950-1975: Personal communication from Marion R. Larsen, Asia Branch,  
International Economics Division, U.S., Department of Agriculture,  
Economics, Statistics, and Cooperatives Service. Data are based on  
official data released by DRVN and on estimates derived by the USDA.  
1955, 1957, 1960-1963, and 1972-1973: Democratic Republic of Vietnam.  
Vietnamese Studies (Hanoi: Xunhasaba), No. 13 (1967) and No. 44 (1976).

4. Rice Yield

1950-1975: Rice yields are calculated by dividing rice production (2) by  
rice area (3) on an annual basis.

5. Rice Area Irrigated

1957: G. Nguyen Tien Hung, Economic Development of Socialist Vietnam,  
1955-1980 (New York: Praeger Publishers, 1977), p. 45.  
1960-1963: Democratic Republic of Vietnam, So lien thong-ke 1963 (Sta-  
tistical Data 1963) (Hanoi: Su That Publishing House, 1964).

6. Rice Imports

1960-1977: U.S. Foreign Agricultural Service, Foreign Agriculture  
Circular, FG-4-78 (Washington, D.C.: 1978).

7. Rice Exports

1960-1977: U.S. Foreign Agricultural Service, Foreign Agriculture  
Circular, FG-4-78 (Washington, D.C.: 1978).

8. Population

1948-1972: Republic of Vietnam. Viện Quốc-gia Thông-kê, Viet-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

13. Farm Wage Rate

1949-1953: Republic of Vietnam. Viện Quốc-gia Thông-kê, Viet-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

14. Domestic Apparent Per Capita Paddy Availability

1955-1972: Domestic apparent per capita paddy availability is calculated by dividing rice production (2) by total population (8) on an annual basis.

15. Main (Autumn) 10th Month Rice Area

1960-1963: Democratic Republic of Vietnam. So lien thông-kê 1963 (Statistical Data 1963) (Hanoi: Su That Publishing House, 1964).

16. Main (Autumn) 10th Month Rice Production

1955-1959: G. Nguyen Tien Hung, Economic Development of Socialist Vietnam, 1955-1980 (New York: Praeger Publishers, 1977).

1960-1963: Democratic Republic of Vietnam. So lien thông-kê 1963 (Statistical Data 1963) (Hanoi: Su That Publishing House, 1964).

17. Main (Autumn) 10th Month Rice Yield

1960-1963: Main rice crop yield is calculated by dividing main crop production (16) by area (15).

TABLE XII

SOUTH VIETNAM (A) Year	Cultivated area '000' ha	Rice prod'n. (B) paddy '000' mt.	Rice area cultivated (B) cropped '000' ha	Rice yield (B) paddy mt/ha	Rice area irrig. '000' ha
	1	2	3	4	5
1947		1662(F)	1316(F)	1.26(F)	
1948		1330	1103	1.21	
1949		1551	1191	1.30	
1950		2210	1650	1.34	
1951		2580	1869	1.38	
1952		2006	1440	1.39	
1953		2084	1599	1.30	
1954		2566	2085	1.23	
1955	2179	2829	2244	1.26	
1956		3412	2540	1.34	
1957		3192	2719	1.17	
1958		4235	2291	1.85	
1959		5092	2400	2.12	
1960	2417	4955	2318	2.14	517(P)
1961	2668(Q)	4607(R)	2353	1.96	
1962	2991	5205	2479	2.10	
1963	3070	5327	2538	2.10	
1964	3073	5185	2557	2.03	
1965	2924	4822	2429	1.99	
1966	2765	4336	2295	1.89	
1967	2756	4688	2296	2.04	
1968	2807	4366(R)	2394	1.82	
1969	2838	5115	2430	2.10	
1970	2919	5716	2511	2.28	
1971	3063	6324	2625	2.41	
1972	3149	6348	2700	2.35	
1973		6600	2865	2.30	
1974		6180	2862	2.16	
1975	(W)	6990	3010	2.32	

TABLE XII (cont'd)

SOUTH VIETNAM (A) Year	Rice imports (C) milled '000' mt	Rice exports (C) milled '000' mt	Population '000' persons	Farm-harvest price paddy piaster/mt
	6	7	8	9
1946			5579(D)	
1947				
1948			5628	
1949	0	117		
1950	0	111		
1951	0	275	9655(K)	
1952	0	154	9688	
1953	0	101	9766	
1954	0(L/M)	177(L/N)	9934	
1955	-	82	11534	
1956	28	5(O)	12366	
1957	18	193	13052	
1958	2	117	12953	
1959	4	249	13789	
1960	14	346	14072	
1961	2	156(S)	14492	
1962	42	86	14275	
1963	-	338	14133	
1964	-	49	14359	4070(T)
1965	130(U)	-(O)	15024	4880
1966	434	0	15112	8090
1967	765	0	16256	14010
1968	678	0	16259	14410
1969	326	-	16543	22470
1970	559	0	17333	29020
1971	137	-	18708	32130
1972	276	-	19213	49450
1973	303	0		

TABLE XII (cont'd)

SOUTH VIETNAM (A) Year	Wholesale rice price (C) milled main market Saigon piaster/day	Retail rice price (C) milled main market Saigon piaster/day	Farm wage rate piaster/day	Domestic apparent per capita paddy availability kg/cap/yr
	11	12	13	14
1946		1200(E)		
1947	1500(G)	2100		
1948	2100	2880		
1949			10(H)	236
1950	2200(I)	2670(J)	15	
1951	2320	2660	16	
1952	3630	4120	21	267
1953	4010	4810	23	207
1954	3350	3990	32	213
1955	4550	5410	42	258
1956	4570	6000	43	245
1957	4350	5130	53	276
1958	4840	5350	61	245
1959	3850	5280	71	327
1960	3970	5030	70	369
1961	5190	6760	72	352
1962	5200	6530	74	318
1963	5290	6540	76	365
1964	5500	7070	78	377
1965	6540	8790	82	361
1966	10500	13400	98	321
1967	20300	27320	155	287
1968	20730	28780	221	288
1969	31350	39540	268	269
1970	40230	53380	338	309
1971	47990	58530	442	330
1972	72290	90100	557	338
1973	114090	111600(V)	659	330

TABLE XII (cont'd)

SOUTH VIETNAM (A) Year	Rice area cultivated (B) first crop '000' ha	Rice production (B) first crop paddy '000' mt	Rice yield (B) first crop paddy mt/ha	Cultivated ha/person
	15	16	17	18
1955				.19
1956				
1957				
1959	2269	5041	2.22	
1960	2098	4688	2.23	.18
1961	2123	4284	2.02	.18
1962	2211	4789	2.17	.21
1963				.22
1964	2292	4765	2.08	.21
1965				.19
1966	2053	3955	1.93	.18
1967				.17
1968				.17
1969				.17
1970				.17
1971				.16
1972				.16

Notes to Appendix Table XII: South Vietnam

A/ Unless otherwise noted, all figures include South Vietnam (Nam-phân), the Central Lowlands (Trung-nguyên Trung-phân), and the Central Highlands (Cao-nguyên Trung-phân).

B/ 1947-1975: Rice area, production, and yields include South Vietnam (Nam-phân), the Central Lowlands (Trung-nguyên Trung-phân), and the Central Highlands (Cao-nguyên Trung-phân) to the 17th parallel.

C/ Rice imports, exports, and prices are in calendar years.

D/ 1946-1948: Prior to 1951, population figures are for South Vietnam only excluding the Central High- and Lowlands.

E/ 1946-1948: Main-market retail rice price is for No. 1 rice.

F/ 1947-1949: Rice area and production for South Vietnam only excluding the Central High- and Lowlands.

G/ 1947-1948: Main-market wholesale rice price is for No. 1, white 25 percent broken rice.

H/ 1948-1972: Farm wage rate is for unskilled male labor and is an average wage for South Vietnam and the Central High- and Lowlands.

I/ 1950-1973: Main-market wholesale rice price is for No. 1 rice.

J/ 1950-1973: Main-market retail rice price is for soc nau rice.

K/ 1951-1972: Population estimates are based on reports from provinces and municipalities and include South Vietnam and the Central Low- and Highlands of Vietnam.

L/ 1954-1973: Rice exports and imports include rice and rice by-products.

M/ 1954-1964: Rice imports source is the Directorate General of Customs.

N/ 1954-1960: Rice exports source is the National Institute of Statistics.

O/ 1956 and 1965: Rice exports were banned.

P/ 1960/1961: Rice area irrigated includes provinces of the southern region and the Central Lowlands. Total rice area planted for the 1960/61 season is 2,205,696 ha. Since 516,674 ha. were irrigated, 23 percent of the total area was irrigated.

Q/ 1961-1972: Cultivated area includes food crop (paddy, corn, sweet potato, manioc, potato, peanut, soybean, vegetable, fruit, etc.), fiber crop (kenaf, jute, ramie, kapok, cotton), industrial crop (rubber, tea, coffee, coconut, tobacco, sugar cane, lacquer tree, cacao), and other crop (mulberry, areca nut) area.

R/ 1961/62 and 1968/69: Paddy production decreased due to floods (1961) and drought (1968).

S/ 1961-1969: Rice export source is the Directorate General of Customs.

T/ 1964-1972: Farm-harvest price is the average monthly price of ordinary paddy (gia hia) at provincial rice mills. It is the arithmetic average of South Vietnam and the Central High- and Lowlands' ordinary paddy prices.

U/ 1965-1973: Rice imports source is the USAID/Vietnam.

V/ 1973: Main-market retail rice price is an average of January-July only.

W/1975: In the spring of 1975, the North Vietnamese occupied Saigon, and South Vietnam as a separate entity ceased to exist. The publication of formal statistical publications, however, ceased in 1973. Thus, production and area figures supplied by USDA for 1974 and 1975 are rough estimates.

Sources of Data for Appendix Table XII: South Vietnam

1. Cultivated Area

1955-1960: G. Nguyen Tien Hung, Economic Development of Socialist Vietnam, 1955-1980 (New York: Praeger Publishers, 1977).

1961-1972: Republic of Vietnam. Bộ Canh-nông, Nha Kinh-tế Nông-nghiệp, Niên-giám thống-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon).

2. Rice Production

1947-1948: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1949: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics) Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

1950-1954: Republic of Vietnam. Bộ Canh-nông, Sở Thông-kê và Kinh-tế Nông-nghiệp (Department of Agriculture, Agricultural Economics and Statistics Service), Việt-nam thông-kê canh-nông (Vietnamese Agricultural Statistics) (Saigon: 1959 and 1960).

1955-1972: Republic of Vietnam. Bộ Canh-nông, Nha Kinh-tế Nông-nghiệp, Niên-giám thống-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon: 1973).

1973-1975: Personal communication from Marion R. Larsen, Asia Branch, International Economics Division, U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service. The numbers are taken directly from the Agricultural Economics and Statistics Service official data.

3. Rice Area Cultivated

1947-1948: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1949: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

1950-1954: Republic of Vietnam. Bộ Canh-nông, Sở Thông-kê và Kinh-tê Nông-nghiệp (Department of Agriculture, Agricultural Economics and Statistics Service), Việt-nam thông-kê canh-nông (Vietnamese Agricultural Statistics) (Saigon: 1959, 1960).

1955-1972: Republic of Vietnam. Bộ Canh-nông, Nha Kinh-tê Nông-nghiệp, Niên-giám thông-kê nông nghiệp (Agricultural Statistics Yearbook) (Saigon: 1973).

1974-1975: Personal communication from Marion R. Larsen, Asia Branch, International Economics Division, U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service. The numbers are taken from the Agricultural Economics and Statistics Service official data.

4. Rice Yield

1947-1975: Rice yields are calculated by dividing paddy production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1960: Republic of Vietnam. Bộ Cải-tiến Nông-thôn, Sở Thông-kê và Kinh-tê Nông-nghiệp, Phúc-trình về cuộc kiểm-tra canh-nông Tại Việt-nam (Report on the Agriculture Census of Viet-nam 1960-1961).

6. Rice Imports

1949-1953 and 1973: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

1954-1972: Republic of Vietnam. Bộ Canh-nông, Nha Kinh-tê Nông-nghiệp, Niên-giám thông-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon: 1973).

7. Rice Exports

1949-1953 and 1973: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

1954-1972: Republic of Vietnam. Bộ Canh-nông, Nha Kinh-tê Nông-nghiệp, Niên-giám thông-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon: 1973).

8. Population

1946-1948: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1950-1955: J. P. Gittinger and Do-Uyen, Vietnamese Agricultural Statistics (Saigon: United States Operations Mission to Viet-nam, 1959); original source: National Institute of Statistics.

1956-1972: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon).

9. Farm-Harvest Price

1964-1972: Republic of Vietnam. Bộ Canh-nông, Nha Kinh-tê Nông-nghiệp, Niên-giám thông-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon).

11. Main-Market Wholesale Price

1947-1948: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1950-1973: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

12. Retail Main-Market Price

1946-1948: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1950-1973: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

13. Farm Wage Rate

1948: Indochina. Service de la Statistique Générale, Annuaire statistique de l'Indochine (Hanoi: Imprimerie d'Extrême-Orient).

1949-1972: Republic of Vietnam. Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thông-kê (Statistical Yearbook of Vietnam) (Saigon). In Vietnamese and French.

14. Domestic Apparent Per Capita Paddy Availability

1948-1972: Rice availability is calculated by dividing rice production (2) by total population (8) on an annual basis.

15. Rice Area, First Crop

1959-1960: Republic of Vietnam. Bộ Canh-nông, So Thông-kê và Kinh-tê Nông-nghiệp (Department of Agriculture, Agricultural Economics and Statistics

Service), Việt-nam thông-kê canh-nông năm 1960 (Vietnamese Agricultural Statistics) (Saigon).

1961-1966: Republic of Vietnam. Bộ Canh-nông, So Thông-kê và Kinh-tê Nông-nghiệp, Niên-giám thông-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon).

16. Rice Production, First Crop

1959-1960: Republic of Vietnam. Bộ Canh-nông, So Thông-kê và Kinh-tê Nông-nghiệp (Department of Agriculture, Agricultural Economics and Statistics Service), Việt-nam thông-kê canh-nông năm 1960 (Vietnamese Agricultural Statistics) (Saigon).

1961-1966: Republic of Vietnam. Bộ Canh-nông, So Thông-kê và Kinh-tê Nông-nghiệp, Niên-giám thông-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon).

17. Rice Yield, First Crop

1959-1966: Rice yields are calculated by dividing first crop rice production (16) by first crop rice area (15) on an annual basis.

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Note: The major agricultural statistics yearbook changed its name from Việt-nam thông-kê canh-nông (Vietnamese Agricultural Statistics) to Niên-giám thông-kê nông-nghiệp (Agricultural Statistics Yearbook) in 1961. Also, the So Thông-kê và Kinh-tê Nông-nghiệp (Agricultural Economics and Statistics Service) was reorganized into Nha Kinh-tê Nông-nghiệp (Directorate of Agricultural Economics) in June 1972.

Country Sources of Basic Data: Vietnam\*

North Vietnam:

1. DRVN. So lien thong-kê 1963 (Statistical Data 1963) (Hanoi: Su That Publishing House, 1964). English translation also available.
2. DRVN. Etudes Vietnamiennes (Hanoi). Selected issues that pertain to agriculture.
3. DRVN. Central Statistical Office, Nam nam xay dung kinh te va van hoa (Five Years of Economic and Cultural Building) (Hanoi: Central Statistical Office, 1960).

South Vietnam:

1. Việt-nam Công-Hòa. Bộ Kế-hoach và Phát-triển Quốc-gia (Ministry of National Planning and Development), Viện Quốc-gia Thông-kê (National Institute of Statistics), Việt-nam niên-giám thong-kê (Statistical Yearbook of Vietnam) (Saigon: 1949/50-1972/73). In Vietnamese and French.
2. Việt-nam Công-hòa. So Thông-kê và Kinh-tê Nông-nghiệp (Agricultural Economics and Statistics Service), Việt-nam thong-kê canh-nông năm 1959, 1960 (Vietnamese Agricultural Statistics 1959, 1960) (Saigon: 1959, 1960).
3. Việt-nam Công-hòa. So Thông-kê và Kinh-tê Nông-nghiệp, Niên-giám thong-kê nông-nghiệp (Agricultural Statistics Yearbook) (Saigon: 1949/50-1972/73).
4. Việt-nam Công-hòa. So Thông-kê và Kinh-tê Nông-nghiệp, Canh-nông thong-kê nguyệt-san (Monthly Bulletin of Statistics) (Saigon).

Useful Secondary Sources\*\*

North Vietnam:

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\* There is currently no published material available for Vietnam.

\*\* There is currently no material available for Vietnam with the exception of magazine and journal articles. The Far Eastern Economic Review is particularly recommended.

1. DRVN. La République Démocratique du Vietnam (Hanoi: Editions en Langues Etrangères, 1975).
2. Vo Nhan Tri, Croissance économique de la République Démocratique du Vietnam (1945-65) (Hanoi: Editions en Langues Etrangères, 1967).
3. G. Nguyen Tien Hung, Economic Development of Socialist Vietnam 1955-80 (New York: Praeger Publishers, 1977).
4. V. P. Karamyshev, Sel'skoe khoziaistvo demokraticheskoi respublikii V'etnam (Agriculture in the Democratic Republic of Vietnam) (Moscow: Gosudarstvennoe izdatel'stvo sel'skokhoziaistvennoi literatury, 1959).

South Vietnam:

1. Hiroshi Tsuji, "Rice Economy and Rice Policy in South Vietnam up to 1974, An Economic and Statistical Analysis," Southeast Asian Studies, Vol. 15, No. 3 (December, 1977).
2. Ignatius, J.G.W., "Rapport sur l'enquête par sondage sur la superficie agricole et la production du paddy au sud et au centre Viet-Nam campagne 1959-1960," FAO.
3. United States Operations Mission to Viet-nam, Division of Agriculture and Natural Resources, Vietnamese Agricultural Statistics (Saigon: March, 1959).
4. Nguyen, van vinh, "Les réformes agraires au Viet-Nam," Université Catholique de Louvain, Faculté des Sciences Economiques et Sociales, Collection de l'Ecole des Sciences Economiques, No. 77 (Librarie Universitaire Uystpruyt: 1961).
5. Nuttonson, M. Y., The Physical Environment and Agriculture of Vietnam, Laos and Cambodia (Washington, D.C.: American Institute of Crop Ecology, 1963).
6. Bộ Canh-nông (Ministry of Agriculture), "Nông-lich Việt-nam công-hòa" (Agricultural Calendar of Vietnam) (1961).

Conversion Factors

Metric Units are in standard usage

South Vietnamese money unit - piaster (dong)

North Vietnamese money unit - dong (piaster)

Vietnamese money unit - dong. One dong set equal to 500 old piasters in 1975.

XIII, XIV. INDONESIA

Rice Statistics in Indonesia<sup>\*</sup>

Regular collection of statistics in Indonesia did not begin until 1920, although some figures for cultivated area, total sawah area, and total rice production were collected from 1916 onwards. In the pre-war era, data were largely limited to Java and Madura, while for all practical purposes information for the Outer Islands is nonexistent. This is, of course, because Indonesia as a distinct national entity was not created until after the war, and because the Dutch, exerting only nominal control over the Outer Islands, were only able to regularly collect statistics for Java and Madura. For this reason, we present historical and post-World War II data for Java and Madura, while our data series for Indonesia begins after World War II.

In 1950, with the official creation of the Indonesian Republic, statistical collection, with the Biro Pusat Statistik (BPS) (Central Statistical Bureau) as head, was revived. BPS cooperates with the Ditjen Pertanian Tanaman Pangan (DPTP) (Directorate General of Food Crops, Ministry of Agriculture) to collect rice statistics. In addition, BULOG (the food planning agency), various other line programs associated with paddy production (for example, BIMAS, INMAS, and INSUS), and the President's Palace (Bina Graha) also collect and compile rice statistics.

The modern Indonesian statistical system is generally organized along the lines of most Asian statistical systems; that is, a central agency coordinates while satellite agencies submit data for particular categories. However, coordination between the center and the periphery agencies is sometimes minimal. Other agencies maintain their own statistical collection apparatus and methods, so there are usually several competing series for each data category.

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BPS and DPTP, the primary agencies gathering rice statistics, rely on a hierarchical system of collection for primary data generation. Both agencies maintain parallel offices at the kecamatan level, where primary data are gathered at the village level from village lurah. Reports are made on a weekly basis for Java and Madura where staffing is better and on a monthly basis for the Outer Islands. In addition, three annual crop cuttings are made for the purpose of yield estimation, although official crop estimation procedure changes frequently as the capacities of the statistical and extension systems continue to improve.

BPS, as the coordinating agency, is responsible for the aggregation of rice statistics at the national level, and it publishes the only official, national-level rice production, area, and yield series that appear in government statistical publications. To a certain extent, BPS is dependent on the DPTP Extension Service data collection apparatus, especially in the Outer Islands, where BPS is understaffed. However, although the two agencies exist in tandem, cooperation can be problematic, and, depending on the locality, collection methods may differ. As a result, final estimates can be drastically divergent. DPTP lower level statistical series serve as the main basis for most regional government planning decisions regarding fertilizer distribution and the like. DPTP also publishes occasional numbers for specific provinces or districts. The quality of DPTP data tends to be irregular, but BPS adjusts DPTP numbers that it uses for consistency.

Area, production, and yield statistics are reported in total, are broken down into padi sawah (wet land paddy) and padi ladang (dry land paddy), and are widely available down to the province level. At the national level, area is generally reported in hectares for both planted and harvested area, and production in metric tons of dry unmilled rice (gabah kering). Prior to 1977,

at the lower levels, rice production was reported in dry stalk paddy (padi kering), the traditional form for unprocessed rice in Indonesia. Currently, with the introduction and popularization of the sickle in place of the ani-ani knife for rice harvest, production is reported in dry gabah (rough rice). Indonesia is peculiar throughout Asia for measuring rice production in stalk paddy form (the panicle of unhusked rice, with a short piece of straw attached). This problem is compounded by the fact that the Indonesian term padi is frequently translated into English as paddy, a common term for unmilled rice.

TABLE XIIIa

JAVA and MADURA	Cultivated area '000' ha	Rice prod'n. milled '000' mt	Rice area harvested '000' ha	Rice yield milled mt/ha	Total area irrig. '000' ha
Year	1	2	3	4	5
1916	5673(C)		3034		
1917	5944		3160		
1918	6477		3273		
1919	6618		3433		
1920	6851	3067	3223	0.95	
1921	6929	2705	2923	0.93	
1922	6967	3302	3309	1.00	
1923	6995	3304	3304	1.00	
1924	7091	3431	3382	1.01	
1925	7155	3259	3295	0.99	
1926	7334	3507	3395	1.03	
1927	7465	3606	3543	1.02	
1928	7566	3623	3526	1.03	883(F)
1929	7603	3516	3423	1.03	815
1930	7646	4450	3559	1.25	883
1931	7658	3648	3513	1.04	934
1932	7685	3862	3690	1.05	944
1933	7703	3917	3778	1.04	988
1934	7726	3685	3731	0.99	993
1935	7753	3993	3783	1.06	1054
1936	7799	4152	3873	1.07	1155
1937	7850	4102	3867	1.06	1176
1938	7871	4349(H)	3960	1.10	1204
1939	7900	4348	4028	1.08	1234

TABLE XIIIa (cont'd)

JAVA and MADURA Year	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price milled guilders/mt	Procurement price
	6	7	8	9	10
1920			34977	308(D)	-
1921	273		36487		-
1922	312		37034	205	-
1923	209	27	37589	183	-
1924	243	38	38153	202	-
1925	267	28	38726	196	-
1926	312	40	39306	205	-
1927	104	12	39896	186	-
1928	293	9	40495	184	-
1929	346		41102	194	-
1930	314		41718	187	-
1931	287		42344	132	-
1932	212		42979	100	-
1933	179		43624	79	-
1934	140	-	44279	76	-
1935	118	-	44942	78	-
1936	9	-	45617	71	-
1937	9	-	46301	81	-
1938	23	-	46996	85	-
1939	34	-	47700	80	-

TABLE XIIIa (cont'd)

JAVA and MADURA	Wholesale rice price milled average guilder/mt	Retail rice price milled main market Jakarta guilder/mt	Farm wage rate guilder/day	Domestic apparent per capita rice availability kg/cap/yr
Year	11	12	13	14
1913	95(A)	146(B)	.28	88
1914				
1915				
1916				
1917				
1918				
1919				
1920		284		88
1921			.56(E)	74
1922	132	262	.52	89
1923	129	233	.46	88
1924	156	265	.45	90
1925	149	229	.48	84
1926	158	245	.45	89
1927	141	256	.45	90
1928	141	254	.46	89
1929	141	249	.46	86
1930	120	241(G)	.46	107
1931	76	189	.44	86
1932	65	136	.38	90
1933	50	114	.33	90
1934	47	111	.28	83
1935	56	115	.26	89
1936	58	113	.23	91
1937	70	113	.24	89
1938	66	114	.27	93
1939	67	113	.27	91

TABLE IIIa (cont'd)

JAVA and MADURA	Main rice crop area Sawah harvested '000' ha	Main rice crop prod'n. Sawah milled '000' mt	Main rice crop yield Sawah milled mt/ha	Cultivated ha/person
Year	15	16	17	18
1916	2643	3023	1.14	
1917	2762	3180	1.15	
1918	2880	3222	1.12	
1919	2979	3507	1.18	
1920	2766	2949	1.07	.20
1921	2619	2653	1.01	.19
1922	2961	3238	1.09	.19
1923	2948	3223	1.09	.19
1924	2995	3338	1.11	.18
1925	2910	3150	1.08	.18
1926	2949	3353	1.14	.19
1927	3056	3430	1.12	.19
1928	3052	3305	1.08	.19
1929	2987	3264	1.09	.18
1930	3123	3497	1.12	.18
1931	3073	3371	1.10	.18
1932	3263	3580	1.10	.18
1933	3324	3644	1.10	.18
1934	3338	3444	1.03	.18
1935	3396	3757	1.11	.17
1936	3475	3888	1.12	.17
1937	3476	3872	1.11	.17
1938	3571	4090(H)	1.15	.17
1939	3653	4116	1.13	.16

TABLE XIIIb

JAVA and MADURA	Cultivated area '000' ha	Rice prod'n. milled '000' mt	Rice area harvested '000' ha	Rice yield milled mt/ha	Rice area irrig. '000' ha
Year	1	2	3	4	5
1940	7928	4664	4089	1.14	1311
1941	7961	4677	4100	1.14	
1942		3932	4026	0.98	
1943		3836	4132	0.93	
1944		3305	3572	0.93	
1945		2741	3118	0.88	
1946		2668	3260	0.82	
1947		n.a.	n.a.	n.a.	
1948		n.a.	n.a.	n.a.	
1949		n.a.	n.a.	n.a.	
1950	8140	3721	3615	1.03	
1951	8166	3908	3787	1.03	
1952	8158	4159	3884	1.07	
1953	8150	4431	4017	1.10	
1954	8220	4817	4157	1.16	
1955	8339	4583	4189	1.09	
1956	8280	4756	4300	1.11	
1957	8331	4740	4311	1.10	
1958	8372	4963	4389	1.13	
1959	8392	5054	4329	1.17	
1960	8395	5057	4320	1.17	
1961	8374	4803	3992	1.20	
1962	8377	5145	4087	1.26	
1963	8424	4443	3647	1.22	1641(P)
1964	8099	4375	3655	1.20	
1965		4975	4034	1.23	
1966		5203	4117	1.26	
1967		4976	4021	1.24	
1968		7074(T)	4264(T)	1.66(T)	
1969		7504	4294	1.75	
1970		7886	4302	1.83	
1971		8439(W)	4416	1.91	
1972		8106	4332	1.87	
1973	6332(X)	8864	4567	1.94	
1974		9438(Y)	4730	2.00	
1975		9330	4653	2.01	
1976		9562	4466	2.14	2390(Z)
1977		9334	4378(AA)	2.13	
1978		10607	4750	2.23	2454(BB)
1979		10680	4630	2.31	
1980		12610(DD)	4780(DD)	2.63(DD)	
1981		13500(DD)	4860(DD)	2.78(DD)	

TABLE XIIIb (cont'd)

JAVA and MADURA	Rice imports milled '000' ha	Rice exports milled '000' ha	Population '000' persons	Farm-harvest price paddy 10 Rp/mt.	Procurement price paddy 10 Rp/mt.
Year	6	7	8	9	10
1940	12	-	48416	83	-
1941		-	48200		
1942		-	48900		
1943		-	49300		
1944		-	49300		
1945		-	48800		
1946		-	48300		
1947		-	48300		
1948		-	48300		
1949	167	-	48800	89(J)	
1950	167	-	50456	93	
1951	264	-	51430	205	
1952	383	-	52437	238	75(L)
1953	186	-	53480	210	75
1954	117	-	54560	210	70
1955	17	-	55679	263	80
1956	440	-	56837	313	90
1957	319	-	58037	340	100
1958	(N)	-	59280	524	142
1959		-	60567	551	175
1960		-	61901	696	200
1961		-	63226(O)	1190	250
1962		-	64357	3371	700
1963		-	65534	7436	2200
1964		-	66757	17183	
1965		-	68028	59275	
1966		-	69345	263(Q/R)	(Q)
1967		-	70708	782	
1968		-	72118	2111	
1969		-	73575	1810	2090(U)
1970		-	75079	2163	2090
1971		-	76629	2063	2090
1972		-	78356	2533	2090
1973		-	80077	3766	2798
1974		-	81801	4233	4180
1975		-	83534	5055	5850
1976		-	85289	8147	6850
1977		-	87076	8413	7100
1978		-		8021	7500
1979		-		10297	9000
1980		-	91270(EE)	11342	10500
1981		-		11975	12000

TABLE XIIIb (cont'd)

JAVA and MADURA	Wholesale rice price milled main market Jakarta 10 Rp/mt	Retail rice price milled average 10 Rp/mt	Farm wage rate Rp/day	Domestic apparent per capita rice availability kg/cap/yr
Year	11	12	13	14
1940	89	114	0.27	96
1941				97
1942				80
1943				78
1944				67
1945				56
1946				55
1947				
1948	87(I)	77		
1949	184	83(K)		
1950	103	85		74
1951	228	201		76
1952	267	231		79
1953	228	211		83
1954	245	219		88
1955	284	271	7.4(M)	82
1956	344	327	9.0	84
1957	441	398	9.2	82
1958	773	598	11.5	84
1959	723	601	13.2	83
1960	775	747		82
1961	1327	1194		76
1962	4619	3568		80
1963	8007	7547		68
1964	21450	17602		66
1965	74117	59650		73
1966	671(Q)	520(Q)	9.3(S)	75
1967	2046	1489	27.2	70
1968	4762	4101	54.8	98
1969	3680(V)	3809	73.3	102
1970	4476	4460	100.9	105
1971	4194	4577		110
1972	4912	5039	124.6	103
1973	7662	8944	164.5	111
1974	7837	9399	208.6	115
1975	9701	11135	254.8	112
1976	11927	13322	248.0	112
1977	12710	14828	360.0	107
1978	15746	14177	433.0	
1979	19637	17662	500.0	
1980	22182			
1981	23773(FF)			

TABLE XIIIb (cont'd)

JAVA and MADURA Year	Main rice crop area harvested Sawah '000' ha	Main rice crop prod'n. Sawah milled '000' mt	Main rice crop yield Sawah milled mt/ha	Cultivated ha/person
	15	16	17	18
1940	3724	4408	1.18	.16
1941	3743	4403	1.18	.16
1942				
1943				
1944				
1945				
1945				
1946				
1947				
1948				
1949				
1950	3388	3588	1.06	.16
1951	3586	3806	1.06	.16
1952	3662	4041	1.10	.15
1953	3768	4284	1.14	.15
1954	3897	4617	1.18	.15
1955	3925	4434	1.13	.15
1956	4076	4629	1.14	.14
1957	4069	4596	1.13	.14
1958	4124	4803	1.16	.14
1959	4056	4881	1.20	.14
1960	4006	4836	1.21	.13
1961	3668	4545	1.24	.13
1962	3703	4784	1.29	.13
1963	3301	4193	1.27	.13
1964	3295	4111	1.25	.12
1965	3658	4713	1.29	
1966	3682	4877	1.32	
1967	3636	4677	1.29	
1968	3857	6767(T)	1.75	
1969	3947	7241	1.83	
1970	3959	7616	1.92	
1971	3947(w)	8151	2.07	
1972	4006	7829	1.95	
1973	4235	8565	2.02	.08
1974	4446	9194(Y)	2.07	
1975	4388	9087	2.07	
1976	4217	9331	2.21	
1977	4133(AA)	9094	2.20	
1978	4467(CC)	10340(CC)	2.31(CC)	

Notes to Appendix Tables XIIIa and XIIIb: Java and Madura

A/ 1913-1940: Wholesale price is an unweighted average market price for imported Rangoon rice at Batavia, Semarang, and Surabaya markets. Since the wholesale price recorded here is for imported rice, it is not comparable to the farm-harvest price series, which is for native rice.

B/ 1913-1929: Average grade retail rice price is for No. 1 bulu rice at Batavia market only.

C/ 1916-1964: Cultivated area refers to total irrigated and non-irrigated farm and estate area. By the early 1960s, approximately 60 percent of the total surface area of Java and Madura was under cultivation.

D/ 1920-1940: Farm-harvest price is an average price for No. 1 husked rice (beras) in native markets on Java and Madura. See Footnote J for additional information.

E/ 1921-1940: Farm wage rate is for males working in sugar fields on estates.

F/ 1928-1940: Irrigated area refers to all cultivated area technically irrigated. This includes irrigated area for all crops, although rice undoubtedly dominates. Technically irrigated area refers only to government operated irrigated land and does not include area irrigated under village schemes.

G/ 1930-1940: Average grade retail rice price is for Tjiandjur rice at Batavia (Jakarta) market only.

H/ 1938-1973: Dry stalk paddy (padi) converted to milled rice (beras) at a 52 percent milling rate. Series provided by BPS.

I/ 1948-1968: Wholesale rice price is for bulu rice and is an average domestic price for Jakarta markets.

J/ 1949-1965: Farm-harvest price is the rural market price for milled No. 1 bulu rice. Farm-harvest prices are similar to or larger than average retail rice prices because the farm-harvest data really represent a retail price for rice in rural markets and are for top quality rice.

K/ 1949-1979: Average retail price is for common or cheap rice and is an unweighted average of four markets: Jakarta, Bandung, Semarang, and Yogyakarta.

L/ 1952-1963: Procurement price is for padi cere No. 2 for Central Java. (Prior to 1960, rice was only procured in three Javanese provinces except for small amounts purchased in S. Sulawesi [1952, 1954] and Sumatera [1959]. Mark Pitt, "Economic Policy and Agricultural Development in Indonesia," Ph.D. thesis, University of California, 1977, p. 24.) Cere No. 2 is a lower quality rice and commands a low free-market price as compared to other types such as No. 1 bulu.

M/ 1955-1959: Farm wage rate is for rubber (heava) estates on Java and includes the gross money wage (gaji) and the value (harga) of payments in kind for both male and female workers. The rate is for all workers on rubber estates, including administrative personnel. The rate is calculated by averaging the number of permanent workers in the months March, June, September, and December, and then dividing the average by the total annual wage bill.

N/ 1958-1981: The Indonesian government as a whole imports rice. See Indonesia Table, Rice Imports (6).

O/ 1961-1971: Interpolated based on results of population censuses in 1961 (62,993,000 people, Oct.) and 1971 (76,031,000 people, Sept.), and further adjusted based on 1971-1981 population projections. 1972-1977: Taken from population projection of Indonesia by age, sex, and region made by BPS for 1971-1981. (Disaggregated estimates available only until 1977.)

P/ 1963: Total area irrigated for all crops.

Q/ 1966-1981: Starting in 1966, prices are given in new rupiah. One new rupiah equals 1,000 old rupiah.

R/ 1966-1981: Farm-harvest price is an average farm-gate price for the four kabupaten of Java for gabah kering (dry paddy). 1966-1975 is for bulu No. 1, and 1976-1981 are for the months of October or September.

S/ 1966-1979: Farm wage rate is the average wage rate for all types of estate agriculture on Java. It includes the gross money wage (gaji) and the value (harga) of payments in kind for both male and female workers. The rate is an unweighted average for all workers, including administrative personnel. Thus, the included wage rates are not strictly representative of a general laborer wage rate. The rate is calculated by averaging the number of permanent workers in the months March, June, September, and December, and dividing the average by the total annual wage bill. Although this wage rate is not representative of the wage rates for paddy laborers, it should give a general idea as to the trends in agricultural wages.

T/ 1968-1981: In 1970, BPS began to use a new method for estimating per hectare yields of padi sawah for Java and Madura. Previously, crop cutting on

sample plots of 1500 sq. meters had been carried out to both determine official yields and to set land taxes based on the average yield. BPS suspected that this practice engendered possible biases because of the opportunities for underestimation. In 1970, they began to make independent crop cuttings to determine yields and subsequently adjusted production figures to 1968. In 1971, BPS began to use net area rather than gross area of harvested sawah. BPS has not factored this change into its recalculation of production figures, so that production and area figures for 1971 and afterwards are not comparable with pre-1971 figures. For a more detailed explanation of BPS methodology and an attempt to adjust BPS series back to 1960, see Alfian Lains, "Regional Concentration of Rice Production in Indonesia," Ph.D. thesis, University of the Philippines, 1978.

U/ 1969-1981: Procurement prices are for cooperative (KUD) sales of HYV rice (HYV varieties of rice are commonly sold to BULOG; traditional varieties are more likely to be sold on the free market) and are in April-March fiscal years.

V/ 1969-1981: Wholesale price is for farm crops in Jakarta markets. 1978-1981 prices are for Saigon bandung rice.

W/ 1971-1981: Bunded area excluded from area of harvested sawah from 1971 onwards.

X/ 1973: Cultivated area figure refers to the total area of all farms and estates on Java and Madura. This number is derived from the 1973 Agricultural Census, and includes the DKI Jakarta, West Java, Central Java, Yogyakarta and East Java.

Y/1974-1981: Dry unhusked paddy (gabah) converted to milled rice (beras) at 68 percent.

Z/1976: Irrigated area figure is for rice area, including technical, semi-technical, simple/village irrigation, and tidal/swamp land.

aa/1977-1981: Definition of sawah area changed to include banded paddy area.

bb/1978: Irrigated area figure refers to total wet-land area planted to paddy and irrigated using man-made means. This includes area under technical, semi-technical, and village/simple systems. Figure refers to total surface area and does not count double-cropped area twice.

cc/1978: Preliminary.

dd/1980, 1981: Preliminary.

ee/1980: Unadjusted results of 1980 population census not including East Timor.

ff/1981: Average of January-September only.

Sources of Data for Appendix Tables XIIIa & b: Java and Madura

1. Cultivated Area

1916-1927: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1928-1973: Nederlandsch-Indië. Departement van Economische Zaken, Centraal Kantoor voor de Statistiek, Statistisch zakboekje voor Nederlandsch-Indië (Batavia: 1934-1938). Name changed to Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

2. Rice Production

1920-1937: Mears, Leon, Rice Marketing in the Republic of Indonesia

(Jakarta: Djakarta School of Economics, University of Indonesia, 1961).

1938-1978: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1979-1981: Mears, Leon, The New Rice Economy of Indonesia (Yogyakarta: Gadjah Mada University Press, 1981).

3. Rice Area

1916-1919: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement von Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1920-1949: Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).

1950-1978: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1979-1981: Mears, Leon, The New Rice Economy of Indonesia (Yogyakarta: Gadjah Mada University Press, 1981).

4. Rice Yields

1920-1981: Rice yields are calculated by dividing rice production (3) by rice area (2) on an annual basis.

5. Rice Area Irrigated

1928-1940: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1963: 1963 Agricultural Census Final Report.

1976: Nyberg, Alberg and Prabowo, Dibyo, "Status and Performance of Irrigation as of 1976 and the Prospects to 1990 and 2000," prepared for

IFPRI/IRRI/IFDC Rice Policy Project in Southeast Asian Countries Workshop, Los Banos, Philippines, May 22-25, 1979, pp. 53-54.

1978: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (1979/1980: Jakarta).

6. Rice Imports

1921-1956: Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).

7. Rice Exports

1923-1928: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

8. Population

1920-1950: Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).

1951-1977: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1980: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1981).

9. Farm-Harvest Price

1920-1940: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1949-1965: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1966-1981: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1970-1981).

10. Procurement Price

No procurement prior to World War II.

1952-1963: Pitt, Mark, "Economic Policy and Agricultural Development in Indonesia," Ph.D. thesis, University of California, 1977, p. 21. Original data from BULOG.

1969-1981: Indonesia. Badan Urusan Logistik.

11. Wholesale Rice Price

1913-1940: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1948-1981: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1970-1981).

12. Retail Rice Price

1913-1940: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch zakboekje voor Nederlandsch-Indië (Batavia: 1934-1938).

1948-1957: Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).

1958-1979: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

13. Farm Wage Rate

1921-1940: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1955-1959: Indonesia. Biro Pusat Statistik, Rata-rata upah buruh perkebunan (Jakarta).

1966-1979: Indonesia. Biro Pusat Statistik, Statistik upah karyawan perkebunan (Jakarta).

14. Domestic Per Capita Apparent Rice Availability

1920-1977: Domestic per capita apparent rice availability is calculated by dividing rice production (2) by population (8) on an annual basis.

15. Main Rice Crop Area (Sawah)

1916-1919: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1920-1941: Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).

1950-1978: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

16. Main Rice Crop Production (Sawah)

1916-1937: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

1938-1978: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

17. Main Rice Crop Yield (Sawah)

1916-1978: Main rice crop yields are calculated by dividing main crop production (16) by main crop area (15) on an annual basis.

TABLE XIV

INDONESIA	Arable area (A) '000' ha	Rice prod'n. milled '000' mt	Rice area harvested '000' ha	Rice yield milled mt/ha	Rice area irrigated '000' ha
Year	1	2	3	4	5
1940			3781		
1941					
1942					
1943					
1944					
1945					
1946					
1947					
1948					
1949					
1950		6017(D)	5700	1.06	
1951		6224	5815	1.07	
1952		6642	6114	1.09	
1953		7313	6465	1.13	
1954		7832	6613	1.18	
1955		7505	6570	1.14	
1956		7602	6702	1.13	
1957		7632	6798	1.12	
1958		7979	6990	1.14	
1959		8294	7153	1.16	
1960		8767	7285	1.20	
1961		8268	6857	1.21	
1962		8898	7283	1.22	
1963		7944	6731	1.18	2347(I)
1964	16900	8420	6980	1.21	
1965	17000	8877	7327	1.21	
1966	17400	9339	7691	1.21	
1967	17500	9047	7516	1.20	
1968	17900	11670(M)	7614	1.53	
1969	18000	12250	7667	1.60	
1970	18100	13140	8135	1.62	
1971	13000	13724	8324(P)	1.65	
1972	13400	13183	7898	1.67	
1973	13800(Q)	14607	7942	1.84	
1974	14200	15276(R)	8509	1.80	
1975	14520	15185	8495	1.79	
1976	14168	15845	9369	1.69	3713(S)
1977	14168	15876	8360(U)	1.90	
1978	14168	17525	8929	1.96	3820(V)
1979	14168	17872	8850	2.03	
1980	14200	20246	9020	2.25	
1981		21670	9300	2.33	
1982		23190			

TABLE XIV (cont'd)

INDONESIA	Rice imports milled '000' mt	Rice exports milled '000' mt	Population year-end '000' persons	Farm-harvest price paddy 10 Rp/mt	Procurement price milled 10 Rp/mt
Year	6	7	8	9	10
1938	334	43			-
1939	278	42			-
1940	109	76	70476		-
1941	82				-
1942					-
1943					-
1944					-
1945					-
1946					-
1947					
1948					
1949	333	-			
1950	334	-	77207		
1951	529	-	78741		
1952	766	-	80329		75(E)
1953	372	-	81973		75
1954	261	-	83676		70
1955	127	-	85440		80
1956	763	-	87267		90
1957	572(G)	-	89160		100
1958	707	-	91122		142
1959	608	-	93153		175
1960	962	-	100655(H)		200
1961	684	-	102900		250
1962	536	-	105242		700
1963	487	-	107627		2200
1964	1785	-	110055		
1965	787	-	112269		
1966	281	-	114176	263(J/K)	
1967	57	-	116115	782	
1968	486	-	118123	2111	
1969	238	-	120280	1810	3700(O)
1970	324	-	122671	2163	3700
1971	120	-	125353	2063	3700
1972	335	-	128175	2533	3700
1973	1863	-	131020	3766	4875
1974	1132	-	133824	4233	6850
1975	693	-	136578	5055	9700
1976	1302	-	139349(T)	8147	10600
1977	1973	-	142187	8413	11000
1978	1842	-	145095	8021	11950
1979	1922	-	148085	10297	14900
1980	2012	-	151168(W)	11342	17500
1981	538	-	154339	11975	19500
1982	310			11946	

TABLE XIV (cont'd)

INDONESIA	Wholesale rice price milled main market Jakarta 10 Rp/mt	Retail rice price milled average 10 Rp/mt	Farm wage rate Rp/day	Domestic apparent per capita rice availability kg/cap/yr
Year	11	12	13	14
1938	66(B)	114(C)		
1939	67	113		
1940	89	114		
1941				
1942				
1943				
1944				
1945				
1946				
1947				
1948	87			
1949	184	89		
1950	103	93		78
1951	228	205		79
1952	267	238		83
1953	228	210		89
1954	245	210		94
1955	284	263	8.7(F)	88
1956	344	313	10.2	87
1957	441	340	10.9	86
1958	773	524	13.4	88
1959	723	551	16.2	89
1960	775	696		87
1961	1327	1190		80
1962	4610	3371		85
1963	8007	7436		74
1964	21450	17183		77
1965	74117	59275		79
1966	671(J)	543(J)	10.7(L)	82
1967	2046	1549	32.0	78
1968	4762(N)	3986	69.9	98
1969	3680	3688	94.9	94
1970	4476	4255	124.8	107
1971	4194	4081		109
1972	4912	4902	146.8	103
1973	7662	7651	205.9	111
1974	7837	8173	252.1	114
1975	9701	9835	306.9	111
1976	11927	14196	346.6	114
1977	12710	15219	417.3	112
1978	15746	16589	502.5	121
1979	19637	21065	587.4	121
1980	22182	24679		134
1981	24259	27600		140
1982	27396	29400(X)		

TABLE XIV (cont'd)

INDONESIA	Main rice crop area harvested Sawah	Main rice crop prod'n. Sawah milled	Main rice crop yield Sawah milled	Arable ha/person
Year	'000' ha	'000' mt	mt/ha	
	15	16	17	18
1950	4781	5421(D)	1.13	
1951	4946	5712	1.15	
1952	5090	6014	1.18	
1953	5380	6580	1.22	
1954	5469	6938	1.27	
1955	5517	6752	1.22	
1956	5701	6920	1.21	
1957	5748	6886	1.20	
1958	5914	7218	1.22	
1959	5936	7399	1.25	
1960	5975	7736	1.29	
1961	5584	7246	1.30	
1962	5036	7725	1.32	
1963	5329	6909	1.30	
1964	5484	7275	1.33	
1965	5875	7783	1.32	
1966	6011	8069	1.34	
1967	5995	7958	1.33	
1968	6364	10442(M)	1.64	
1969	6544	11167	1.71	
1970	6679	12037	1.80	
1971	6893(P)	12640	1.83	.10
1972	6602	12169	1.84	.11
1973	7064	13469	1.91	.12
1974	7340	14316(R)	1.95	.11
1975	7334	14178	1.93	.11
1976	7229	14859	2.06	.10
1977	7202(U)	14829	2.06	.10
1978	7698	16437	2.14	.10
1979	7675	16818	2.20	.09
1980	7824	19035	2.43	
1981	8173	21075	2.58	

Notes to Appendix Table XIV: Indonesia

A/ BPS does not release cultivated area statistics on an annual basis, although an estimate for the total area of farms and estates is computed decennially as part of the agricultural census. (For the most recent estimate, see Footnote Q, 1973.) Harvested area statistics for most important food crops are regularly released each year.

B/ 1938-1967: Wholesale rice price is for bulu and is an average domestic price for Jakarta markets.

C/ 1938-1982: Retail price is for No. 1, milled bulu rice. Bulu is the best quality and hence highest priced domestic rice. Data are taken from the BPS "Retail price of 12 food articles in rural markets of Java and Madura" series, and represent an average market price for the islands of Java and Madura only.

D/ 1950-1973: Dry stalk paddy (padi) converted to milled rice (beras) at 52 percent. Series provided by BPS.

E/ 1952-1963: Procurement price is for padi cere No. 2 for Central Java. (Prior to 1960, rice was only procured in three Javanese provinces except for small amounts purchased in S. Sulawesi [1952, 1954] and Sumatera [1959]. Mark Pitt, "Economic Policy and Agricultural Development in Indonesia," Ph.D. thesis, University of California, 1977, p. 24.) Cere No. 2 is lower quality than bulu.

F/ 1955-1959: Farm wage rate is for rubber (heava) estates, and includes the gross money wage (gaji) and the value (harga) of payments in kind for both male and female workers. The rate is for all workers on rubber estates, including administrative personnel. The rate is calculated by averaging the number of permanent workers in the months March, June, September, and December, and dividing the average by the total annual wage bill.

G/1957-1982: Includes rice and glutinous rice imports.

H/1960: USDA estimates are used 1960-1981. USDA estimates are considerably larger than official Indonesian figures, but probably more realistically assess population growth. 1960-1975 population estimates exclude E. Timor (annexed in 1976). An adjusted 1970 census figure for E. Timor estimates the total population as 642,000 persons.

I/1963: Total area irrigated for all crops.

J/1966-1982: Starting in 1966 prices are given in new rupiah: one new rupiah equals 1,000 old rupiah.

K/1966-1982: Farm-harvest price is an average farm-gate price for the four kabupaten of Java for gabah kering (dry paddy). 1966-1975 is for bulu No. 1, and 1976-1982 are for the months of October or September.

L/1966-1979: Farm wage rate is the average wage rate for all types of estate agriculture. It includes the gross money wage (gaji) and the value (harga) of payments in kind for both male and female workers. The rate is an unweighted average for all workers including administrative personnel. Thus, the included wage rates are not strictly representative of a general laborer wage rate. The rate is calculated by averaging the number of permanent workers in the months March, June, September and December, and dividing the average by the total annual wage bill. Although this wage rate is not representative of the wage rates for paddy laborers, it should give a general idea of the trends in agricultural wage rates.

M/ 1968-1982: In 1970, BPS began to use a new method for estimating per hectare yields of padi sawah for Java and Madura. Previously, crop cutting on sample plots of 1500 sq. meters had been carried out to both determine official yields and to set land taxes based on average yields. BPS suspected that this practice engendered possible biases because of the opportunities for underestimation. In 1970, they began to make independent crop cuttings to determine yields, and subsequently adjusted production figures back to 1968. In 1971, BPS began to use net area rather than gross area of harvested sawah. BPS has not factored this change into its recalculation of production figures, so that production and area figures for 1971 and afterwards are not comparable with pre-1971 figures. For a more detailed explanation of BPS methodology and an attempt to adjust BPS series back to 1960 see: Alfian Lains, "Regional Concentration of Rice Production in Indonesia," Ph.D. thesis, University of the Philippines, 1978. Leon Mears also provides a table in which rice production is adjusted back to 1960 (The New Rice Economy of Indonesia, 1981, p. 488).

N/ 1968-1982: Wholesale rice price is for farm crops in Jakarta markets. 1978-1982 prices are for Saigon Bandung rice.

O/ 1969-1981: Procurement prices are for cooperative (KUD) sales of HYV rice (HYV varieties of rice are commonly sold to BULOG; traditional varieties are more likely to be sold on the free market), and are in April-March fiscal years.

P/ 1971-1981: Bunded area excluded from area of harvested sawah from 1971 onwards.

Q/ 1973: During the 1973 Census of Agriculture, BPS found that the total area of farms and estates was 16,394,000 ha.--a much lower figure than the FAO estimate for 1973.

R/ 1974-1982: Dry unhusked paddy (gabah) converted to milled rice (beras) at 68 percent. Series provided by BPS.

S/ 1976: Irrigated area figure is for rice area (see Footnote V), including technical, semi-technical, simple/village, and tidal swamp land irrigation systems.

T/ 1976-1981: Population estimates for Indonesia are projected based on the midyear 1975 adjusted population census figure and on assumed trends in fertility and mortality since 1975. The population of E. Timor is included.

U/ 1977-1981: Definition of sawah area changed to include banded paddy area.

V/ 1978: Irrigated area figure refers to total wet-land area planted to paddy and irrigated using man-made means. This includes area under technical, semi-technical, and village/simple systems. Figure refers to total surface area and does not count double-cropped area twice.

W/ 1980: Unadjusted result of Oct. 31, 1980 population census--excluding E. Timor--is 147,490,000 persons.

X/ 1982: Retail rice price is an average of January-November only.

Sources of Data for Appendix Table XIV: Indonesia

NOTE: For the pre-World War II period, see Java and Madura table.

1. Arable Area

1964-1970: Food and Agriculture Organization of the United Nations, FAO Production Yearbook (Rome).

1971-1980: U.N. Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok).

2. Rice Production

1950-1979: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1980: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1981).

1981: Mears, Leon, The New Rice Economy of Indonesia (Yogyakarta: Gadjah Mada University Press, 1981).

1982: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1983).

3. Rice Area

1950-1979: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1980-1981: Mears, Leon, The New Rice Economy of Indonesia (Yogyakarta: Gadjah Mada University Press, 1981).

4. Rice Yield

1950-1981: Rice yields are calculated by dividing reported rice production (2) by area (3) on an annual basis.

5. Rice Area Irrigated

1963: 1963 Agricultural Census Final Report.

1976: Nyberg, Albert and Prabowo, Dibyoo, "Status and Performance of Irrigation in Indonesia as of 1978 and the Prospects to 1990 and 2000," prepared

for the IFPRI/IRRI/IFDC Rice Policy Project for Southeast Asian Countries Workshop, Los Banos, Philippines, May 22-25, 1979, pp. 53-54.

1978: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (1979/1980: Jakarta).

6. Rice Imports

1938-1956: Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).

1957-1979: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1980-1982: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1982).

7. Rice Exports

1938-1940: Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).

8. Population

1940-1959: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta: 1940).

1960-1969: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1950-79 (Washington, D.C.: 1979), 1SP-WP-79(A).

1970-1981: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates for Countries With a Population of 10 Million or More: 1981 (Washington, D.C.: 1981), 1SP-WP-81.

9. Farm-Harvest Price

1966-1982: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1970-1982).

10. Procurement Price

1952-1963: Pitt, Mark, "Economic Policy and Agricultural Development in Indonesia," Ph.D. thesis, University of California, 1977, p. 21; original source: BULOG.

1969-1981: Indonesia. Badan Urusan Logistik.

11. Wholesale Rice Price (Main Market)

1938-1967: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

1968-1982: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1970-1982).

12. Average Retail Rice Price

1938-1982: Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta: 1970-1981).

13. Farm Wage Rate

1955-1959: Indonesia. Biro Pusat Statistik, Rata-rata upah buruh perkebunan (Jakarta).

1966-1979: Indonesia. Biro Pusat Statistik, Statistik upah karyawan perkebunan (Jakarta).

14. Domestic Apparent Per Capita Rice Availability

1950-1981: Domestic availability is calculated by dividing rice production (2) by population (8) on an annual basis.

15. Main Rice Crop Area (Sawah)

1950-1981: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

16. Main Rice Crop Production (Sawah)

1950-1981: Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).

17. Main Rice Crop Yield

1950-1981: Main rice crop yields are calculated by dividing main crop production (16) by main crop area (15) on an annual basis.

Country Sources of Basic Data: Indonesia

Historically, Java and Madura have been the seat of political and administrative power in the Indonesian islands. In the pre-World War II period, the Dutch collection of statistics was largely limited to these islands. The post-World War II Indonesian government did not begin the serious collection of statistics until 1950, so that there is a substantial gap in the 1940s between Dutch and Indonesian sources.

Historical Sources:

1. Nederlandsch-Indië. Samengesteld door het Centraal Kantoor voor de Statistiek van het Departement van Economische Zaken, Statistisch jarroverzicht van Nederlandsch-Indië (Batavia: Landsdrukkerij).
2. Nederlandsch-Indië. Departement van Economische Zaken, Centraal Kantoor voor de Statistiek, Statistisch zakboekji voor Nederlandsch-Indië (Batavia).

Indonesian Sources:

1. Indonesia. Biro Pusat Statistik, Statistical Pocketbook of Indonesia (Jakarta).
2. Indonesia. Biro Pusat Statistik, Statistical Yearbook of Indonesia (Jakarta).
3. Indonesia. Badan Urusan Logistik, Pedoman pelaksanaan pengadaan dalam negeri tahun (Jakarta).

4. Indonesia. Biro Pusat Statistik, Survey pertanian (Jakarta).
5. Indonesia. Biro Pusat Statistik, Produksi tanaman bahan makanan di Indonesia (Jakarta).
6. Indonesia. Biro Pusat Statistik, Indikator ekonomi (Jakarta).

Useful Secondary Sources

1. Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford: Food Research Institute, Stanford University, 1941).
2. Weitz-Hettelsater Engineers, sponsored by U.S., Agency for International Development, Rice Storage, Handling and Marketing, The Republic of Indonesia (1972).
3. Danwood, Dayan, "Rice Importation in Indonesia, 1961-1974," M.A. thesis, University of the Philippines, 1977.
4. Booth, Anne, "Irrigation in Indonesia: Part I," Bulletin of Indonesian Economic Studies, Vol. XIII, No. 3 (March, 1977).
5. Timmer, C. Peter, "The Political Economy of Rice in Asia: Indonesia," Stanford University, Calif.: Food Research Institute Studies, Vol. 14, No. 3, 1975.
6. Lains, Alfian, "Regional Concentration of Rice Production in Indonesia," Ph.D. thesis, University of the Philippines, 1978.
7. Bulletin of Indonesian Economic Studies (Canberra: Australian National University).
8. Ekonomi dan keucangan Indonesia (Jakarta), quarterly.
9. Pitt, Mark, "Economic Policy and Agricultural Development in Indonesia," Ph.D. thesis, University of California, 1977.
10. Mears, Leon, The New Rice Economy of Indonesia (Yogyakarta: Gadjah Mada University Press, 1981).

11. Mears, Leon, Rice Marketing in the Republic of Indonesia (Djakarta: Djakarta School of Economics, University of Indonesia, 1961).
12. Tabor, Steve, "Sources of Price Stability in Indonesian Agriculture: Implications for Growth and Equity," M.S. thesis, Cornell University, 1983.

Glossary of Selected Indonesian Terms

1. Stalk paddy (padi) - includes the unmilled rice grains with the stalk or straw attached. The Indonesian term for stalk paddy is padi, the common Western term for unmilled rice.
2. Gabah - general term for unmilled or rough rice.
3. Beras - general term for milled rice.
4. Kering - dry; padi kering is dry stalk paddy.
5. Basah - wet; padi basah is wet stalk paddy.
6. Lurah - village headman
7. Sawah - land on which rice is grown that is puddled and flooded, often irrigated, but also includes rainfed area. Sawah is frequently translated as "irrigated area," but this is not strictly accurate.
8. Petani - general term for farmer.
9. Ladang - dry land cultivation including upland and shifting cultivation (brief periods of cultivation with long periods of fallow, characteristic of hillside areas). Currently, there are about four million hectares of ladang land.
10. Perkerangan - household garden land. Most farmers maintain small garden plots that are intensively cultivated to fruits, vegetables, and staples such as soybeans, peanuts, and taro. Much of the produce of the small plots is marketed and contributes an important share to most farmers' incomes.
11. Kecamatan - sub-district

12. Kabupaten - district
13. Desa - village
14. Gudang - warehouse
15. Harga - price
16. Gaji - wage

#### Acronyms

- BPS - Biro Pusat Statistik, or CBS: Central Bureau of Statistics
- BULOG - Badan Urusan Logistik (Food Logistics Board)
- BIMAS - Bimbingan Masal (Mass Guidance)
- DPTP - Ditjen Pertanian Tanaman Pangan (Directorate General of Foodcrops,  
Ministry of Agriculture)
- INMAS - Intensifikasi Masal (Mass Intensification)
- INSUS - Intensifikasi Khusus (Special Intensification)

In older publications, Dutch names or Dutch spellings for Indonesian place names are sometimes used. For example: Batavia = Djakarta = Jakarta.

#### Money Unit

Prior to World War II, unit of money = guilder

Post-World War II unit of money = rupiah

Mid-1965, rupiah devalued so that 1 new rupiah = 1,000 old rupiah. In 1978, the rupiah was devalued by 33.6 percent against the U.S. dollar to stimulate domestic manufacturing and increase export competitiveness.

In 1980 1 US\$ = 626.70 rupiah official exchange rate

In 1980 1 US\$ = 633.33 rupiah free-market exchange rate

Important Rice Conversion Factors

Historical:

1 centenaar = 100 kg. = 1 quintal

1 bouw (bahoe) = 0.709 ha.

1 picul of rice = 0.6176 mt. rice

1 picul of rice = 100 kati rice

Current:

1 litre rice = .8 kg. rice

1 gantang rice = 8.58 litres = .00686 mt. rice

1 mt. rice = 145.69 gantang

Milling Rates:

dry stalk paddy (padi kering) to milled rice (beras) - 52% (before 1960, 50% used)

wet stalk paddy (padi basah) to dry stalk paddy (padi kering) - 75-80%

unmilled rice (gabah) to dry unmilled rice (gabah kering) - 85%

dry stalk paddy (padi kering) to unmilled rice (gabah) - 80%

dry unmilled rice (gabah kering) to milled rice (beras) - 68%

Note: Rice milling conversion factors are subject to change depending on the organization, area, etc.

XV, XVI, XVII, XVIII: MALAYSIA

Rice Statistics in Malaysia

As in many other rice-producing countries, statistical collection in Malaysia is coordinated by a central agency, the Department of Statistics, under the aegis of the Prime Minister's Department. Most routine collection of agricultural data is carried out by the Ministry of Agriculture down to the sub-district (mukim) level. Other ministries also routinely collect pertinent data as a by-product of regular work.

Although post-war rice statistics are quite complete because of the government's interest in improving the food security situation, by contrast, pre-war rice statistics are not readily available. Since the 1921/22 crop year, the government has published regular estimates at the national level for total paddy area, output, and yield in Malaysia. However, early data are based almost exclusively on subjective estimates, and it is suggested that pre-1932 figures should be viewed as rough only (Lim Chong-yah, Economic Development of Modern Malaya [Kuala Lumpur: Oxford University Press, 1967], pp. 149-150). As in Sri Lanka, the British were interested in export crops, and little attention was invested in food crops.

At present, the Ministry of Agriculture regularly collects and reports rice area at the national level for three categories of rice: main-season wet, main-season dry, and off-season wet paddy (since 1948). Data are reported in crop years using the metric system, although until recently the Malaysian (and Indonesian) rice volume measure, the gantang, was used for yield, the British long ton for production, and the acre for area. Data are available for both planted and harvested rice area (since 1947/48).

MOA area statistics for rice are based on statistical collection carried out by Junior Agricultural Assistants at the mukim or sub-district level.

These estimates are generally based on "eye estimates," where current area is compared to past area, and some discussion with farmers. Occasional use is made of aerial surveys and other objective methods of data collection. There is reason to believe that rice area figures may be inflated by some 5 to 10 percent because of the usual inclusion of area under rural housing, bunds, and irrigation channels under total rice area figures (Malcolm John Purvis, "Evaluation and Use of Underdeveloped Agricultural Statistics: The Food Economy of Malaysia," Cornell University, Ph.D. thesis, 1966, p. 82).

Rice yields, used to calculate production in conjunction with rice area planted, were also visually estimated until 1964. In 1964, an annual survey using a stratified multi-stage random sample design was initiated. This survey covers all important padi-producing districts in West Malaysia for both main-season wet and off-season wet paddy production. Although the random sample survey produces yield estimates that are superior to those produced under the system of visual estimation, yields are probably overestimated because handling losses and post-harvest damage are not taken into account (Donald Taylor, The Economics of Malaysian Paddy Production and Irrigation [Bangkok: The Agricultural Development Council, 1981], p. 34).

In Sabah and Sarawak, data collection for rice revolves around the Departments of Agriculture and Statistics. In both areas, the two departments collaborate to carry out an annual paddy survey. The Department of Statistics designs surveys, and processes and analyzes data collected by the Department of Agriculture. The DOA also collects area data from information gathered by extension staff.

TABLE XV

MALAYA(A)	Area under agricultural crops '000' ha	Rice prod'n. milled '000' mt	Rice area planted '000' ha	Rice yield milled mt/ha	Rice imports milled '000' mt
Year	1	2	3	4	6
1918		190			350(D)
1919		191			376
1920		165			341
1921		215(E)	261(E)	0.82(E)	238
1922		239	266	0.90	370
1923		228	264	0.86	367
1924		243	266	0.91	400
1925		188	265	0.71	413
1926		194	263	0.74	486
1927		206	269	0.77	559
1928		193	278	0.69	536
1929		163	266	0.61	577
1930		268	287	0.93	605
1931	1859(J)	301	294	1.02	526
1932		305	311	0.98	419
1933		342	310	1.10	448
1934	2020	336	298	1.13	471
1935	1970	348	294	1.18	483
1936	2000	324	300	1.08	548
1937	2049	304	294	1.03	589
1938	2055	344	302	1.14	628
1939	2149	337	318	1.06	705
1940	2197	329	332	0.99	668
1941					556
1942					
1943					
1944					
1945		229	320	0.72	
1946		261	329	0.79	141
1947	2098	349	359	0.97	241
1948	2143	312	368	0.85	457
1949	2137	443	377	1.18	491
1950					443

TABLE XV (cont'd)

MALAYA(A) I Year	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price paddy M\$/mt	Retail rice price milled Singapore M\$/day	Farm wage rate M\$/day
	7	8	9	12	13
1901		679(B)			
1902		735			
1903	-(C)	801			
1904	-	838			
1905	-	872			
1906	-	918			
1907	-	979			
1908	-	966			
1909	8	969			
1910	11				
1911	10	1037			
1912	5	1082			
1913	13	1118			
1914	11	1137			
1915	12	1172			
1916	6	1208			
1917	4	1244			
1918	5	1280			
1919	2	1316			
1920	12	1352			
1921		1335			
1922	237	1374			
1923	204	1413		141(G)	
1924	189	1451		173	
1925	251	1490		162	
1926	285	1529		184	
1927	299	1568		181	0.48(H)
1928	285	1607		164	0.48
1929	238	1646		165	0.55
1930	212	1713		109(I)	0.43
1931	178	4385		67	0.35
1932	186			66	0.31
1933	162			58	
1934	169		24(K)	48	0.40(L)
1935	187		32	66	0.39
1936	185		32	64	0.41
1937	141		33	73	0.49
1938	206		35	70	0.49
1939			36	66	
1940	4			82	
1941					
1942					
1943					
1944					
1945					
1946	2				
1947		5849(M)		1773	

TABLE XV (cont'd)

MALAYA(A) I	Domestic apparent per capita rice availability kg/cap/yr	Wet rice area planted '000' ha	Wet rice prod'n. milled '000' mt	Wet rice yield milled mt/ha
Year	14	15	16	17
1921	196(F)	239(E)		
1922	194	225		
1923	187	227		
1924	183	229	148(E)	0.65(E)
1925	178	231	173	0.75
1926	172	231	180	0.78
1927	172	256	200	0.78
1928	173	264	185	0.70
1929	162	255	158	0.62
1930	168	244	255	1.05
1931	67	257	282	1.10
1932		273	284	1.04
1933		280	328	1.17
1934		271	326	1.20
1935		273	335	1.23
1936		281	315	1.12
1937		276	295	1.07
1938		284	331	1.17
1939		292	320	1.10
1940		301	312	1.04
1941				
1942				
1943				
1944				
1945		277	219	0.79
1946		297	248	0.84
1947	60	325	333	1.02
1948		341	299	0.88
1949		353	427	1.21

Notes to Appendix Table XV: Malaya

A/ British Malaya or Malaya includes the Straits Settlement, Federated Malay States, and Unfederated Malay States. Singapore, a Straits Settlement State, is included unless specifically mentioned otherwise.

B/ 1901-1931: Population figures include the populations of Perak, Selangor, Negri Sembilan, and Pahang States only (The Federated Malay States). The total population of British Malaya, including the Straits Settlements and Federated and Unfederated States, was 2,672,800 persons in 1911, 3,358,100 persons in 1921, and 4,385,300 persons in 1931 according to the respective censuses.

C/ 1903-1920: Rice export figures include the exports of Perak, Selangor, Negri Sembilan, and Pahang States only.

D/ 1918-1950: Rice imports are net import figures and include padi converted to rice at .60 percent recovery rate, white rice, parboiled rice, broken rice, and cargo rice.

E/ 1921-1949: Rice and wet rice area, output, and yields are recorded in crop years where, for example, 1921/22 is recorded under the calendar year 1921. Federated and Unfederated Malay States and Straits Settlements are included. This is contrary to the usual Malayan style of counting crop years by the final year, that is, 1921/22 is recorded under 1922.

F/ 1921-1931: Domestic availability of rice figures listed here is more than double real availability because population figures are for the Federated Malay States only.

G/ 1923-1929: Main-market (Singapore) retail rice price is for Siam No. 1 rice.

H/ 1927-1932: Farm wage rate is an average for male Indian field workers in Perak, Selangor, Negri Sembilan, and Pahang.

I/ 1930-1947: Main-market (Singapore) retail rice price is for Siam No. 2 rice.

J/ 1931-1949: Area under agricultural crops is for the Straits Settlements and for the Federated and Unfederated Malay States and includes area under rubber, coconut, paddy, five secondary crops, and 13 minor crops.

K/ 1934-1939: Farm-harvest price is the price paid at the government rice mill in Bagan Serai for paddy.

L/ 1934-1938: Farm wage rate is an average wage paid to South Indian male laborers for field work in British Malaya.

M/ 1947: Population figure is from the 1947 Census of Population and includes Singapore.

Sources of Data for Appendix Table XV: Malaya

1. Area Under Agricultural Crops

1931-1947: Federation of Malaya. Department of Agriculture, Malayan Agricultural Statistics, Economic Series Nos. 1-15 (Kuala Lumpur: Caxton Press, Ltd.).

1948-1949: Federation of Malaya. Department of Agriculture, Heath, R. G., Malayan Agricultural Statistics 1949, Economic Series No. 15 (Kuala Lumpur: Caxton Press, Ltd., 1951).

2. Rice Production

1918/19-1949/50: Federation of Malaya. Department of Agriculture, Heath, R. G., Malayan Agricultural Statistics 1949, Economic Series No. 15 (Kuala Lumpur:

Caxton Press, Ltd., 1951).

3. Rice Area

1921/22-1949/50: Federation of Malaya. Department of Agriculture, Heath, R. G., Malayan Agricultural Statistics 1949, Economic Series No. 15 (Kuala Lumpur: Caxton Press, Ltd., 1951).

4. Rice Yield

1921/22-1949/50: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

6. Rice Imports

1918-1950: Federated Malay States. Federated Malay States Government Press, Manual of Statistics Relating to the Federated Malay States (Kuala Lumpur: 1921).

7. Rice Exports

1903-1920: Federated Malay States. Federated Malay States Government Press, Manual of Statistics Relating to the Federated Malay States (Kuala Lumpur: 1921)

1922-1940: Cheng, Siok-hwa, The Rice Trade of Malaya (Singapore: University Education Press, 1973).

1946: Malaya. Malayan Statistics (London: The Malayan Information Agency).

8. Population

1901-1920: Federated Malay States. Federated Malay States Government Press, Manual of Statistics Relating to the Federated Malay States (Kuala Lumpur: 1921).

1921-1931: Alexander, C. S., Malayan Statistics (London: Malayan Information Agency, 1933).

1947: Federation of Malaya. Department of Agriculture, Heath, R. G., Malayan Agricultural Statistics 1949, Economic Series No. 15 (Kuala Lumpur: Caxton Press, Ltd., 1951).

9. Farm-Harvest Price

1934-1939: Federation of Malaya. Department of Agriculture, Malayan Agricultural Statistics (Kuala Lumpur: Caxton Press, Ltd.).

12. Retail Price

1923-1947: Federation of Malaya. Department of Agriculture, Malayan Agricultural Statistics (Kuala Lumpur: Caxton Press, Ltd., 1951 and 1939).

13. Farm Wage Rate

1927-1932: Alexander. C. S., Malayan Statistics (London: Malayan Information Agency, 1933).

1934-1938: Straits Settlement and Federated Malay States. Statistics Department, Malayan Yearbook (Singapore: Government Printing Office).

14. Domestic Apparent Per Capita Rice Availability

1921-1947: Domestic apparent per capita rice availability is calculated by dividing total rice production (2) by population (8) on an annual basis.

15. Wet Rice Area Planted

1921/22-1949/50: Federation of Malaya. Department of Agriculture, Heath, R. G., Malayan Agricultural Statistics 1949, Economic Series No. 15 (Kuala Lumpur: Caxton Press, Ltd., 1951).

16. Wet Rice Production

1924/25-1949/50: Federation of Malaya. Department of Agriculture, Heath, R. G.,

Malayan Agricultural Statistics 1949, Economic Series No. 15 (Kuala Lumpur: Caxton Press, Ltd., 1951).

17. Wet Rice Yields

1924/25-1949/50: Wet rice yields are calculated by dividing wet rice production (16) by wet rice area (15) on an annual basis.

TABLE XVI

WEST (A) MALAYSIA	Area under various crops(B) '000' ha	Rice (B) prod'n. milled '000' mt	Rice area harvested (B) '000' ha	Rice(B) yield milled mt/ha	Rice area irrig. '000' ha
Year	1	2	3	4	5
1947	2155(C)	435(D)	329(E)	1.32	
1948	2193	349	342	1.02	
1949	2207	312	340	0.92	
1950	2201	379	368(L)	1.03	
1951	2170	292	290	1.01	
1952	2175	377	263	1.43	
1953	2204	362	274	1.32	
1954	2229	342	273	1.25	
1955	2258	351	291	1.21	
1956	2284	362	288	1.26	
1957	2307	424	300	1.41	
1958	2331	425	305	1.39	
1959	2347	379	296	1.28	
1960	2384	486	317	1.53	
1961	2383	532	323	1.65	
1962	2474	502	329	1.53	
1963	2537	545	337	1.62	146(P)
1964	2558	485	322	1.51	151
1965	2621	580	341	1.70	129
1966	2643	594	345	1.72	173
1967	2680	670	393(R)	1.70	201
1968	2725	793	460	1.72	298
1969	2860	875	497	1.76	317
1970	2756	929	525	1.77	331
1971	2774	1005	532	1.89	346
1972	2812	1018	557	1.83	361
1973	2892	1123	581	1.93	377
1974	3009	1182	580	2.04	
1975	3100	1116	585	1.91	
1976	3173	1134	569	1.99	
1977	3231	1060	550	1.93	
1978	3292	799	407	1.96	
1979		1170	554	2.11	
1980		1145	519	2.21	
1981		1137	511	2.23	

TABLE XVI (cont'd)

WEST (A) MALAYSIA	Rice imports milled '000' mt	Rice exports milled '000' mt	Population midyear '000' persons	Farm-harvest price paddy M\$/mt	Procurement price paddy M\$/mt
Year	6	7	8	9	10
1947			4908		
1948	325(F)	-	4987(G)		
1949	309	-	5082		248(K)
1950	299	-	5139		231
1951	316	-	5263		248
1952	289	17	5529		281
1953	358	-	5709		281
1954	201	-	5858		198
1955	353	-	6005		231
1956	369	-	6190		248
1957	346	-	6405		248
1958	352	5	6596		
1959	368	2	6815		
1960	380	17	7017		
1961	341	20	7035		
1962	315	23	7240		265
1963	405	10	7441		265
1964	415	7	7621		265
1965	298	37	7815		265
1966	243	32	8032		265
1967	301	10	8228		265
1968	244	2	8405		265
1969	231	6	8584		265
1970	272	5	8775		265
1971	148	3	9018		265
1972	122	23	9263		265
1973	185	25	9502		
1974	222	15	9742		
1975	87	25	9997	499(S)	
1976	131	15	10242	523	
1977	163	-	10510	520	
1978	296	9	10762	500	
1979	102	1	11042	515(U)	
1980	73	48	11138	500	
1981	149	24	11394	480	
1982				440(U)	

TABLE XVI (cont'd)

WEST (A) MALAYSIA	Wholesale rice price milled average M\$/mt	Retail rice price milled average M\$/mt	Farm wage rate M\$/day	Domestic apparent per capita rice availability kg/cap/yr
Year	11	12	13	14
1947				89
1948	594(H)	782(I)		70
1949	536	529		61
1950	504	496		74
1951	503	529		55
1952	548	628		68
1953		678		63
1954		595		58
1955	390(N)	480		58
1956	430	463	2.40(O)	58
1957	432	463	2.60	66
1958	451	463		64
1959	447	463	2.65	56
1960	416	430	2.95	69
1961	423	463		76
1962	468	463		69
1963	450	463		73
1964	439	463		64
1965	440	463		74
1966	467	479	2.48(Q)	74
1967	558	579	2.47	81
1968	564	612	2.53	94
1969	529	579	2.60	102
1970	443	562	2.60	106
1971	431	562	2.50	111
1972	441	562	2.53	110
1973	831	694	2.73	118
1974	840	926	3.60	121
1975	858	957	3.40	112
1976	862	952	4.33	111
1977	898(T)	970(T)		101
1978	910	980		74
1979				106
1980	910	980		103
1981	910	980		100

TABLE XVI (cont'd)

WEST (A) MALAYSIA	Wet (main) rice area (B) harvested '000' ha	Wet (main) rice prod'n (B) milled '000' mt	Wet (main) rice yield (B) milled mt/ha	Ha under crops/person
Year	15	16	17	18
1947	297(E)	412	1.39	.44
1948	310(J)	529(J)	1.71(J)	.44
1949	314	475	1.51	.43
1950	276(M)	367(M)	1.33(M)	.43
1951	261	282	1.08	.41
1952	263	368	1.40	.39
1953	268	354	1.32	.39
1954	262	357	1.36	.38
1955	275	342	1.24	.38
1956	272	351	1.29	.37
1957	282	404	1.43	.36
1958	288	413	1.43	.35
1959	278	365	1.31	.34
1960	298	469	1.57	.34
1961	307	517	1.68	.34
1962	310	487	1.57	.34
1963	319	529	1.66	.34
1964	305	470	1.54	.33
1965	323	566	1.75	.33
1966	328	580	1.77	.33
1967	312	541	1.73	.32
1968	349	608	1.74	.32
1969	378	668	1.77	.33
1970	373	662	1.77	.31
1971	355	660	1.86	.31
1972	347	607	1.75	.30
1973	361	673	1.86	.30
1974	355	710	2.00	.31
1975	365	666	1.82	.31
1976	341	629	1.84	.31
1977	333	588	1.77	.31
1978	300	595	1.98	.30
1979	328	673	2.05	
1980	312	669	2.14	
1981	310	671	2.16	

Notes to Appendix Table XVI: West Malaysia

In 1948, the Federation of Malay was formed, and in 1957, the Federation gained independence within the British Commonwealth. The Federation of Malaysia, including the states of West Malaysia, Singapore, Sabah, and Sarawak, was formed in 1963. Singapore subsequently withdrew in 1965 to become an independent country. The statistics in this table are for West Malaysia only.

A/ In 1867, the British formed the Straits Settlement by joining the Malaysian states of Penang and Malacca and Singapore. Later, other Malaysian states were also added, but the island of Borneo (Sabah, Sarawak, Brunei, and Kalimantan) was maintained as a separate entity. In 1948, the Federation of Malaya, excluding Singapore, was formed, and in 1963, the independent Federation of Malaysia, including Sabah, Sarawak, and Singapore, was organized, although Singapore withdrew in 1965. This table only includes data for the states of peninsular Malaysia. Data for Sabah and Sarawak may be found in Tables XVII and XVIII.

B/ Paddy and wet paddy area, yield, and output are recorded in crop years where, for example, the statistics for crop year 1969/70 are recorded under the year 1970 in the table.

C/ 1947-1978: Area under various crops includes rubber, coconut, paddy, oil palm, and miscellaneous crop area.

D/ 1946/47-1980/81: Total rice production includes main-season wet production (padi musim utama-sawah), dry padi upland and lowland (padi huma tanah tinggi dan rendah), and off-season padi (padi luar musim) since 1948.

E/ 1946/47: Rice area is for rice area planted. Rice area harvested statistics were not reported until 1947/48.

E/ 1948-1981: Rice imports are for gross imports.

G/ 1948-1981: Population estimates are midyear estimates as of June 30th.

H/ 1948-1952: Wholesale rice price is for the main market of Penang only and is for No. 1 (import) Rangoon rice.

I/ 1948-1976: Retail rice price is for local kedah No. 1 rice.

J/ 1947/48-1948/49: Wet rice area and output also include the off-season crop.

K/ 1949-1972: Procurement price is the Guaranteed Minimum Price (GMP) for dry paddy (not more than 13 percent moisture content) delivered to the mill door. The GMP program was introduced in 1949 by the government with the idea of encouraging increased paddy output while bolstering the incomes of paddy farmers. The GMP, while nominally tied to domestic and world free-market prices, in practice is fixed and maintained at the same level for many years. Prices reported here are on a varying midyear basis, usually July to June.

L/ 1950-1981: Rice area harvested includes main-season (wet) padi (padi musim utama-sawah), dry padi upland and lowland (padi huma tanah tinggi dan rendah), and off-season padi (padi luar musim) since 1948.

M/ 1950-1981: Main-season (wet) padi (padi musim utama-sawah) does not include off-season production. It should be noted that main season padi output accounts for about 35 percent of total production and off-season for about 64 percent of total production. This attests to the importance of double cropping of padi land in the production of rice.

N/ 1955-1976: Wholesale rice price is for white No. 1, kedah rice and is from the new crop.

O/1956-1960: Farm wage rate is for tea estate weeders.

P/1963-1973: Rice area irrigated includes main season and off-season irrigated area. Figures for 1970-1973 are interpolated based on a 4.429 percent annual growth. The original source for 1963-1969 is the Ministry of Agriculture and Lands, adapted from Lai Kok Chew, "On Prospects of Self-Sufficiency in Rice for West Malaysia," Malaysian Agricultural Research and Development Institute, Jalan, Swettenham, Kuala Lumpur.

Q/1966-1976: Farm wage rate is for male workers only.

R/1966/67: Paddy area statistics revised.

S/1975-1978 and 1980-1981: Farm-harvest price is an average padi price for kedah long.

T/1977-1981: Average wholesale and retail rice prices are for Malaysian long, super 10 percent (A2) rice.

U/1979 and 1982: Farm-harvest price is for Selangor market.

Sources of Data for Appendix Table XVI: West Malaysia

1. Area Under Various Crops

1947-1960: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of West Malaysia (Kuala Lumpur).

1961-1964: Malaysia. Jabatan Perangkaan (Department of Statistics) Buku kecil perangkaan bagi semenanjung Malaysia (Statistical Handbook of Peninsular Malaysia) (Kuala Lumpur).

1965-1978: Peninsular Malaysia. Kementerian Pertanian (Ministry of Agriculture), Rumusan perangkaan (Statistical Digest) (Kuala Lumpur).

2. Rice Production

1946/47: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Agricultural Supplement 1953 (Kuala Lumpur).

1947/48-1952/53: Malaysia. Ministry of Agriculture and Cooperatives, Revised Padi Statistics (Kuala Lumpur).

1953/54-1965/66: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur: 1967).

1966/67-1980/81: Peninsular Malaysia. Planning and Development Division, Kementerian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

3. Rice Area

1946/47-1948/49: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Rice Supplement (Kuala Lumpur).

1949/50-1952/53: Malaysia. Ministry of Agriculture and Cooperatives, Revised Padi Statistics (Kuala Lumpur).

1953/54-1965/66: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur: 1967).

1966/67-1980/81: Peninsular Malaysia. Planning and Development Division, Kementerian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

4. Rice Yield

1946/47-1980/81: Rice yields are calculated by dividing rice production (2)

by rice area (3) on an annual basis.

5. Rice Area Irrigated

1963-1973: Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, 1980).

6. Rice Imports

1948-1958: Cheng, Siok-hwa, The Rice Trade of Malaya (Singapore: University Education Press, 1973).

1959-1967: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur).

1968-1981: Peninsular Malaysia. Planning and Development Division, Kementerian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

7. Rice Exports

1948-1953: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Agricultural Supplement 1953 (Kuala Lumpur).

1954-1958: Malaysia. Ministry of Agriculture and Cooperatives, "Import and Export Trade in Food and Agricultural Products" (Kuala Lumpur).

1959-1967: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur).

1968-1981: Peninsular Malaysia. Kementerian Pertanian (Ministry of Agriculture), Rumusan perangkaan (Statistical Digest) (Kuala Lumpur).

8. Population

1947: Federation of Malaya. Department of Statistics, Monthly Statis-

tical Bulletin of the Federation of Malaya - Agricultural Supplement 1953 (Kuala Lumpur).

1948-1949: Malaya. Registrar of Malayan Statistics at Singapore, Malayan Statistics Monthly Digest of Economic and Social Statistics Relating to the Colony of Singapore and the Federation of Malaya (Singapore).

1950-1960: Malaya (Federation). Department of Statistics, Monthly Statistical Bulletin of West Malaysia (Kuala Lumpur).

1961-1975: Peninsular Malaysia. Jabatan Perangkaan (Department of Statistics), Buku kecil perangkaan bagi semenanjung Malaysia (Statistical Handbook of Peninsular Malaysia) (Kuala Lumpur).

1976-1981: Peninsular Malaysia. Planning and Development Division, Kementerian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur: 1980).

9. Farm-Harvest Price

1979 and 1982: Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, 1982).

1975-1981: Peninsular Malaysia. Planning and Development Division, Kementerian Pertanian (Ministry of Agriculture), Perangkaan padi (Padi Statistics) (Kuala Lumpur).

10. Procurement Price

1949-1957: ECAFE/FAO Agriculture Division, Economic Commission for Asia and the Far East, Food and Agricultural Price Policies in Asia and the Far East (Bangkok: United Nations, 1958).

1962-1972: Selvadurai, S., "Padi Farming in West Malaysia" (Kuala

Lumpur: Ministry of Agriculture and Fisheries, 1972), p. 41.

11. Average Wholesale Price

1948-1952: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin (Kuala Lumpur).

1955-1958: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin (Kuala Lumpur).

1959-1967: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur).

1968-1981: Peninsular Malaysia. Planning and Development Division, Kementarian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

12. Average Retail Rice Price

1948-1967: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin (Kuala Lumpur).

1968-1981: Peninsular Malaysia. Planning and Development Division, Kementarian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

13. Farm Wage Rate

1956-1960: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin (Kuala Lumpur).

1966-1976: International Labour Organization, various issues.

14. Domestic Apparent Per Capita Rice Availability

1947-1981: Domestic apparent per capita rice availability is calculated by dividing rice production (2) by population (8) on an annual basis.

15. Wet Rice Area

1946/47-1952/53: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Rice Supplement (Kuala Lumpur).

1953/54-1965/66: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur: 1967).

1966/67-1980/81: Peninsular Malaysia. Planning and Development Division, Kementarian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

16. Wet Rice Production

1946/47-1952/53: Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Rice Supplement (Kuala Lumpur).

1953/54-1965/66: Malaysia. Jabatan Perangkaan (Department of Statistics), Perangkaan beras bagi Malaysia barat (Rice Statistics for West Malaysia) (Kuala Lumpur: 1967).

1966/67-1980/81: Peninsular Malaysia. Planning and Development Division, Kementarian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

17. Wet Rice Yields

1946/47-1980/81: Wet rice yields are calculated by dividing wet rice production (16) by wet rice area (15) on an annual basis.

TABLE XVII

SABAH	Estimated area of major crops '000' ha	Rice prod'n. paddy '000' mt	Rice area planted '000' ha	Rice yield paddy mt/ha	Rice area irrig. '000' ha	Rice imports milled '000' mt
Year	1	2	3	4	5	6
1950						8
1951			29(D)			16
1952		35(D)	29	1.21(D)		14
1953		49	30	1.63		11
1954		51	29	1.76		8
1955		58	29	2.00	6	15
1956		53	30	1.77	6	19
1957		56	31	1.81	6	18
1958		47	31	1.52	7	22
1959		57	31	1.84	7	19
1960	124(F)	66	31	2.13	7	21
1961	147(I)	80	38	2.11	10	24
1962	164	74	38	1.95	10	25
1963	172	69	35	1.97	10	32
1964	186	75	37	2.03	10	32
1965	193	85	35	2.43		31
1966	207	79	39	2.03		32
1967	217	75	41(K)	1.83	10(L)	31
1968	227	96	42	2.29		26
1969	239	96	41	2.34		30
1970	242	100	42	2.38	20	36
1971	251	113	44	2.57	21	43
1972	258	126	43	2.93	21	45
1973	256	110	43	2.56	21	53
1974	265	120	47	2.55	22	43
1975	263	87(N)	44(N)	1.98(N)	25	41
1976	279	88	42	2.10		39
1977	288	90	42	2.14		56
1978	303	98	46	2.13		66
1979	327	98	44	2.23		69
1980	358	91	40	2.28		58

TABLE XVII (cont'd)

SABAH	Rice exports milled '000' mt	Population midyear '000' persons	Farm-harvest price paddy M\$/mt	Retail rice price milled average M\$/mt	Farm wage rate M\$/day
Year	7	8	9	12	13
1947		331(A)		939(B)	1.50(C)
1948					1.50
1949		345			1.50
1950		351			2.50
1951		352(E)		735	2.50
1952				814	3.50
1953				938	3.50
1954				861	3.50
1955				782	3.50
1956		389(A)	207	782	3.50
1957				822	
1958		416(A)		822	
1959				763	
1960	-(G)	454(H)		802	
1961	-	470		802	
1962	-	486		880	
1963	-	501		853	
1964	-	520			
1965	-	539			
1966	-	560		958(J)	
1967	-	582		1095(M)	
1968	-	601		904	
1969	-	623		767	
1970	-	649		708	
1971	-	680		704	
1972	4	718		712	
1973	-	758		1248	
1974	-	790		1739	
1975	-	821		1760	
1976	-	862		1545	
1977	-	904		1385	
1978	-				
1979					
1980				1381	

TABLE XVII (cont'd)

SABAH	Domestic apparent per capita paddy availability kg/cap/yr	Wet rice area planted '000' ha	Wet rice prod'n. paddy '000' mt	Wet rice yield paddy mt/ha	Ha under crops/ person
Year	14	15	16	17	18
1951		18(D)			
1952	99	18	25(D)	1.39(D)	
1953		18	39	2.17	
1954		18	43	2.39	
1955		18	47	2.61	
1956	136	18	41	2.28	
1957		18	42	2.33	
1958	113	17	36	2.12	
1959		19	47	2.47	
1960	145	19	51	2.68	.27
1961	170	27	69	2.56	.31
1962	152	27	63	2.33	.34
1963	138	27	59	2.19	.34
1964	144	26	64	2.46	.36
1965	158	26	75	2.88	.36
1966	141	28	70	2.50	.37
1967	129	29(K)	65	2.24	.37
1968	160	30	86	2.87	.38
1969	154	32	87	2.72	.38
1970	154	31	91	2.94	.37
1971	166	33	105	3.18	.37
1972	175	33	117	3.55	.36
1973	145	33	101	3.06	.34
1974	152	34	111	3.26	.33
1975	106(O)	29(N)	76(N)	2.62(N)	.32
1976	102	27	78	2.89	.32
1977	100	27	79	2.93	.32
1978		31	87	2.81	
1979		32	88	2.75	
1980		29	83	2.86	

Notes to Appendix Table XVII: Sabah

A/ 1947-1950, 1956 and 1958: Population estimates are not adjusted.

B/ 1947-1963: Retail rice price is a simple average of June and December prices.

C/ 1947-1956: Wage rates are the lowest average rates for unskilled workers.

D/ 1951-1980: Planted rice area and rice production include wet (main season) area, hill padi area, and kendinga padi area. Area data are recorded in calendar years, whereas production data are recorded in agricultural years where, for example, 1966/67 production year is matched to the 1967 calendar year. Since 1967, the Department of Agriculture has collected data pertaining to double-cropped area. In this table, double-cropped area is only counted once, but double-crop production is included (but excluded from 1975-1980). All double cropping is carried out on wet padi lands.

	Double Crop Rice Area (ha.)	Double Crop Production (metric tons)	Double Crop Yield (mt./ha.)
1967	113	237	2.10
1968	1630	4382	2.69
1969	2545	6383	2.51
1970	1842	4703	2.55
1971	2509	7366	2.94
1972	3891	11770	3.02
1973	5689	15083	2.65
1974	3775	11455	3.03
1975	3788	12624	3.33
1976	2064	5391	2.61

E/ 1951: Population figure is an adjusted census figure for June 3, 1951.

F/ 1960-1980: Estimated area for major crops includes rubber, coconut, wet paddy, dry paddy, oil palm, hemp, and cocoa area. In 1980, only about 13 percent of total estimated area of major crops was devoted to dry and wet paddy. Double-cropped area is only counted once. Most of the rise in estimated area is due to increased oil palm acreage.

G/ 1960-1976: Year is from January-December.

H/ 1960-1977: Population figures are unadjusted estimates for midyear, June 30th.

I/ 1961: Cultivated area figure, taken directly from the 1961 Census of Agriculture, is 164,000 ha. and includes temporary cropland, permanent cropland, fallow land, and grazing land, but does not include unopened lands suitable for cultivation and land used for other purposes (housing, etc.) by farmers.

J/ 1966: Average retail rice price is for 100 percent Siam rice.

K/ 1967: From 1967, data was collected for double cropping.

L/ 1967-1975: Rice area irrigated is the sum of wet padi irrigated and double-cropped area irrigated.

M/ 1967-1980: Average retail rice price is for local rice.

N/ 1974/75-1979/80: Rice area and output series are revised and calculated on an agricultural year basis. Double-cropped area and production are excluded.

O/ 1975-1977: The apparent drop in paddy availability in 1975 is statistically induced by subtraction of double-cropping production from total production in Column 2, "Rice Production."

Sources of Data for Appendix Table XVII: Sabah

1. Estimated Area of Major Crops

1960-1980: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah)  
(Kota Kinabalu).

2. Rice Production

1951/52-1959/60: Sabah. Department of Agriculture, Annual Report of the  
Department of Agriculture (Annual).

1960/61-1961/62: Malaysia. Department of Agriculture, Agricultural Sta-  
tistics of Sabah (Kota Kinabalu: Agricultural Information Division).

1962/63-1973/74: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Buku maklumat perangkaan (Statistical Handbook of Sabah) (Kota Kinabalu).

1974/75-1979/80: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah) (Kota  
Kinabalu: 1980).

3. Rice Area

1951: Great Britain: Colonial Reports, North Borneo (London: His  
Majesty's Stationery Office).

1952-1960: Sabah. Department of Agriculture, Annual Report of the De-  
partment of Agriculture (Annual).

1961-1963: Malaysia. Department of Agriculture, Sabah. Agricultural  
Statistics of Sabah (Kota Kinabalu: Agricultural Information Division).

1964-1974: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Buku maklumat perangkaan (Statistical Handbook of Sabah) (Kota Kinabalu).

1974/75-1979/80: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah) (Kota  
Kinabalu: 1980).

4. Rice Yield

1952-1980: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1955-1963: Sabah. Department of Agriculture, Annual Report of the Department of Agriculture (Annual).

1967-1976: Sabah. Federal Department of Information, Sabah Annual Report (Singapore: Eurasia Press).

6. Rice Imports

1950-1951: Great Britain. Colonial Reports, North Borneo (London: His Majesty's Stationery Office).

1952-1960: Sabah. Department of Agriculture, Annual Report of the Department of Agriculture (Annual).

1961-1980: Malaysia. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah) (Kota Kinabalu: 1980).

7. Rice Exports

1960-1976: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-20-79 (Washington, D.C.: 1979).

8. Population

1947-1950 and 1956, 1958: Great Britain. Colonial Reports, North Borneo (London: His Majesty's Stationery Office).

1951: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates for Countries With a Population of 10 Million or More: 1981, 1SP-WP-81 (Washington, D.C.: 1981).

1960-1977: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah)  
(Kota Kinabalu: 1980).

9. Farm-Harvest Price

1956: Sabah. Department of Agriculture, Annual Report of the Department of Agriculture (Annual).

12. Average Retail Price

1947-1963: Great Britain. Colonial Reports, North Borneo (London: His Majesty's Stationery Office).

1966-1980: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah)  
(Kota Kinabalu).

13. Farm Wage Rate

1947-1956: Great Britain. Colonial Reports, North Borneo (London: His Majesty's Stationery Office).

14. Domestic Apparent Per Capita Paddy Availability

1956-1977: Domestic apparent per capita paddy availability is calculated by dividing rice production (2) by population (8) on an annual basis.

15. Wet Rice Area

1951: Great Britain. Colonial Reports, North Borneo (London: His Majesty's Stationery Office).

1952-1963: Sabah. Department of Agriculture, Annual Report of the Department of Agriculture (Annual).

1964-1974: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Buku maklumat perangkaan (Statistical Handbook of Sabah) (Kota Kinabalu).

1975-1980: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah)  
(Kota Kinabalu).

16. Wet Rice Production

1952-1963: Sabah. Department of Agriculture, Annual Report of the  
Department of Agriculture (Annual).

1964-1974: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Buku maklumat perangkaan (Statistical Handbook of Sabah) (Kota  
Kinabalu).

1975-1980: Malaysia. Jabatan Perangkaan (Department of Statistics),  
Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah)  
(Kota Kinabalu: 1980).

17. Wet Rice Yields

1952-1980: Rice yields are calculated by dividing wet rice production  
(16) by wet rice area (15) on an annual basis.

TABLE XVIII

SARAWAK	Area under principal crops '000' ha	Rice prod'n. paddy '000' mt	Rice area planted '000' ha	Rice yield paddy mt/ha	Rice imports milled '000' mt	Rice exports milled '000' mt
Year	1	2	3	4	6	7
1940					35	
1941						
1942						
1943						
1944						
1945						
1946					4	
1947					19	
1948					18	
1949					12	
1950					20	
1951					32	
1952		80(C/D)			29	
1953		94			22	
1954		94			22	
1955		82			32	
1956		73	74(D)	0.99(D)	38	
1957		102	89	1.15	47	
1958			111		39	
1959		110	104	1.06	51	
1960	284(F)	97	115	.84	50(G)	-(G)
1961	261	110	114	.96	57	-
1962	289	103	115	.90	52	-
1963	263	99	120	.83	59	-
1964	267	119	122	.98	58	-
1965	289	114	107	1.07	58	-
1966	316(I)	89	116	.77	60	-
1967	334	124	137	.91	62	-
1968	384	153	142	1.08	45	-
1969	397	147	127	1.16	56	-
1970	388	157	135	1.16	60	-
1971	398	162	146	1.11	60	-
1972	414	130	111	1.17	64	-
1973	383	153	117	1.31	71	-
1974	378	144	118	1.22	99	-
1975	385	151	124	1.22	37	-
1976	393(I)	172	131	1.31	64	-
1977	404	184	135	1.36	78	-
1978	412	192	144	1.33	56	-
1979	416	190	146	1.30	68	-
1980		177	146	1.21	73	-
1981					102	-

TABLE XVIII (cont'd)

SARAWAK	Population midyear '000' persons	Farm-harvest price paddy M\$/mt	Wholesale price milled average M\$/mt	Retail price milled average M\$/mt	Farm wage rate M\$/day
Year	8	9	11	12	13
1947	573(A)				
1948					
1949					1.45(B)
1950					1.55
1951					3.30
1952					3.42
1953					2.52
1954					2.54
1955		298(E)			3.00
1956		256			3.00
1957		256			4.70
1958		234			4.35
1959		240			4.65
1960	745	223			4.65
1961	760	215			4.75
1962	778	236			3.23
1963	805	265			
1964	827	265			
1965	852	265	527(H)		
1966	877	265	601	628(J)	
1967	905	265	759	777	4.00(K)
1968	927	265	741	827	
1969	948	265	695	728	
1970	972	265	612	678	
1971	998	265	563	628	
1972	1024	265	634	695	
1973	1052	277	853	1232	
1974	1080	399	1152	1617	
1975	1107	397		1344	
1976	1135	397		1098(L)	
1977	1163	397		918	
1978	1191	397		978	
1979	1221	397		996	
1980	1295	397		1039	
1981				1070(M)	

TABLE XVIII (cont'd)

SARAWAK	Domestic apparent per capita paddy availability kg/cap/yr	Wet rice area planted '000' ha	Wet rice prod'n. paddy '000' mt	Wet rice yield paddy mt/ha	Ha under crops/ person
Year	14	15	16	17	18
1956		24(D)			
1957		29			
1958		30			
1959		33	47(D)	1.42(D)	
1960	130	41	48	1.17	.38
1961	145	42	58	1.38	.34
1962	132	43	54	1.26	.37
1963	123	45	48	1.07	.33
1964	144	48	73	1.52	.32
1965	134	47	66	1.40	.34
1966	101	45	51	1.13	.36
1967	137	52	69	1.33	.37
1968	165	55	87	1.58	.41
1969	155	52	79	1.52	.42
1970	162	62	97	1.56	.40
1971	162	60	101	1.68	.40
1972	127	48	86	1.79	.40
1973	145	51	103	2.02	.36
1974	133	54	97	1.80	.35
1975	136	58	101	1.74	.35
1976	152	68	127	1.87	.35
1977	158	68	134	1.97	.35
1978	161	71	140	1.97	.34
1979	156	71	143	2.01	.34
1980	137	71	132	1.86	

Notes to Appendix Table XVIII: Sarawak

A/ 1947: Population estimate for 1947 is an adjusted census figure for November 26, 1947.

B/ 1949-1962: Farm wage rate is for rubber tappers on plantations.

C/ 1952-1957: Rice production figures are all estimates and are probably underestimates.

D/ Rice area, production, and yield figures are reported in crop years.

E/ 1955-1980: Farm-harvest price recorded here is the government guaranteed price for padi.

F/ 1960-1979: Area under principal crops includes hill padi, wet padi, sago, coconut, pepper, rubber, and oil palm area. 1979 figure is preliminary.

G/ 1960-1981: Rice imports and exports are reported on a calendar-year basis for paddy, brown rice, milled rice, parboiled rice, broken rice, and others converted to a milled basis. Sarawak rice exports are practically nil.

H/ 1965-1974: Average wholesale price is for Siam white, 100 percent rice.

I/ 1966, 1976: Agricultural land figures for 1976 and 1966 are 3,206,000 ha. and 2,712,000 ha., respectively. This includes area planted to horticultural crops, tree palm and other permanent crops, and wet and hill padi land.

J/ 1966-1975: Average retail rice price is for Siam 100 percent rice.

K/ 1967: Farm wage rate is for males only.

L/ 1976-1980: Average retail rice price is for local milled rice.

M/ 1981: Retail price is for Siam white, 100 percent rice at Kuching market.

Sources of Data for Appendix Table XVIII: Sarawak

1. Area Under Principal Crops

1960-1979: Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Buku maklumat perangkaan (Statistical Handbook, Sarawak) (Kuching).

2. Rice Production

1952/53-1957/58: Great Britain. Colonial Reports, Sarawak (London: His Majesty's Stationery Office).

1959/60-1980/81: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

3. Rice Area

1956/57-1958/59: Malaysia, Sarawak. Department of Agriculture, Digest of Agricultural Statistics (Kuching).

1959/60-1980/81: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

4. Rice Yields

1956/57-1980/81: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

6. Rice Imports

1940-1953: Great Britain. Colonial Reports, Sarawak (London: His Majesty's Stationery Office, 1962), p. 76.

1954-1959: Federation of Malaysia. Department of Statistics, Annual Bulletin of Statistics, State of Sarawak 1964 (Kuching).

1960-1981: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

7. Rice Exports

1960-1981: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

8. Population

1947: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates for Countries With a Population of 10 Million or More: 1981, ISP-WP-81 (Washington, D.C.: 1981).

1960-1980: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching: 1981).

9. Farm-Harvest Price<sup>\*</sup>

1955-1959: Great Britain. Colonial Reports, Sarawak (London: His Majesty's Stationery Office).

1960-1981: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

11. Wholesale Rice Price

1965-1974: Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics),

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\* The farm-harvest price used here is the government guaranteed price for paddy.

Buku maklumat perangkaan (Statistical Handbook of Sarawak) (Kuching).

12. Retail Rice Price

1966-1972: Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan tahunan (Annual Statistical Bulletin, Sarawak) (Kuching).

1973-1979: Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Buku maklumat perangkaan (Statistical Handbook, Sarawak) (Kuching).

1980: Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan suku pertama 1981 (Bulletin of Statistics 1st Quarter 1981) (Kuching).

1981: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

13. Farm Wage Rate

1949-1962: Great Britain. Colonial Reports, Sarawak (London: His Majesty's Stationery Office).

1967: Malaysia, Sarawak. Department of Agriculture, Digest of Agricultural Statistics (Kuching).

14. Domestic Apparent Per Capita Paddy Availability

1960-1980: Domestic apparent per capita paddy availability is calculated by dividing total production (2) by population (8) on an annual basis.

15. Wet Rice Area

1956/57-1958/59: Malaysia, Sarawak. Department of Agriculture, Digest of Agricultural Statistics (Kuching).

1959/60-1980/81: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

16. Wet Rice Production

1959/60-1980/81: Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).

17. Wet Rice Yield

1959/60-1980/81: Yields of wet padi are calculated by dividing wet rice production (16) by wet rice area (15) on an annual basis.

Country Sources of Basic Data: Malaysia

Malaya and West Malaysia

1. Federation of Malay. Department of Agriculture, Malayan Agricultural Statistics, Economic Series Nos. 1-15 (Kuala Lumpur: Caxton Press, Ltd.). See Nos. 7, 10, and 15.
2. Federated Malay States. Federated Malay States Government Press, Manual of Statistics Relating to the Federated Malay States (Kuala Lumpur: 1921).
3. Federation of Malay. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Rice Supplement (Kuala Lumpur).
4. Federation of Malaya. Department of Statistics, Monthly Statistical Bulletin of the Federation of Malaya - Agricultural Supplement 1953 (Kuala Lumpur).
5. Federation of Malay. Department of Statistics, Monthly Statistical Bulletin (Kuala Lumpur).

6. Malaysia. Jabatan Perangkaan (Department of Statistics), Buku kecil perangkaan bagi semenanjung Malaysia (Statistical Handbook of Peninsular Malaysia) (Kuala Lumpur).
7. Malaysia. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan tahunan (Annual Bulletin of Statistics) (Kuala Lumpur).
7. Peninsular Malaysia. Kementerian Pertanian (Ministry of Agriculture), Rumusan perangkaan (Statistical Digest) (Kuala Lumpur).
9. Peninsular Malaysia. Kementerian Pertanian (Ministry of Agriculture), Perangkaan padi (Paddy Statistics) (Kuala Lumpur).

#### Sabah

1. Great Britain. Colonial Reports, North Borneo (London: His Majesty's Stationery Office).
2. Malaysia, Sabah. Federal Department of Information, Sabah Annual Report (Singapore: Eurasia Press).
3. Malaysia, Sabah. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan tahunan (Annual Bulletin of Statistics, Sabah) (Kota Kinabalu).
4. Malaysia, Sabah. Jabatan Perangkaan (Department of Statistics), Buku maklumat perangkaan (Statistical Handbook of Sabah) (Kota Kinabalu).
5. Malaysia, Sabah. Jabatan Perangkaan (Department of Statistics), Perangkaan bulanan (Monthly Statistics, Sabah) (Kota Kinabalu).
6. Malaysia, Sabah. Department of Agriculture, Annual Report of the Department of Agriculture.
7. Malaysia, Sabah. Department of Agriculture, Agricultural Statistics of Sabah (Kota Kinabalu: Agricultural Information Division).

Sarawak

1. Great Britain. Colonial Reports, Sarawak (London: His Majesty's Stationery Office); ceased publication in 1962.
2. Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan tahunan (Annual Statistical Bulletin) (Kuching).
3. Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Siaran perangkaan suku pertama (Quarterly Bulletin of Statistics) (Kuching).
4. Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Buku maklumat perangkaan (Statistical Handbook, Sarawak) (Kuching).
5. Malaysia, Sarawak. Jabatan Pertanian (Department of Agriculture), Perangkaan pertanian Sarawak (Agricultural Statistics of Sarawak) (Kuching).
6. Malaysia, Sarawak. Jabatan Perangkaan (Department of Statistics), Perangkaan perdajangan luar Sarawak (Statistics of External Trade) (Kuching).

Useful Secondary Sources

1. Cheng, Siok-hwa, The Rice Trade of Malaya (Singapore: University of Education Press, 1973).
2. Selvadurai, S., "Padi Farming in West Malaysia," Bulletin No. 127 (Kuala Lumpur: The Ministry of Agriculture and Fisheries, 1972).
3. Malcolm, John Purvis, "Evaluation and Use of Underdeveloped Agricultural Statistics: The Food Economy of Malaysia," Ph.D. thesis, Cornell University, 1966.
4. Li, Dun J., British Malaya: An Economic Analysis (New York: The American Press, 1955).

5. Taylor, Donald C., The Economics of Malaysian Paddy Production and Irrigation (Bangkok: The Agricultural Development Council, 1981).
6. Taylor, Donald C.; Noh, Kusairi Mohd.; and Hussein, Mohd. Arrif, "An Economic Analysis of Irrigation Development in Malaysia," Working Paper No. 1, Rice Policies in Southeast Asia Project, IFPRI, IFDC, IRRI, 1981.
7. Goldman, Richard H., "Staple Food Self-Sufficiency and the Distributive Impact of Malaysian Rice Policy," Stanford University, Calif.: Food Research Institute, Vol. XIV, No. 3, 1975.

#### Sabah

1. The British North Borneo (chartered) Company, Handbook of the State of British North Borneo With a Supplement of Statistical and Other Useful Information (London).
2. Chatfield, Godfrey A., Sabah, A General Geography (London: Eastern Universities Press SDN BHD in association with the University of London Press, Ltd., 1972).

#### Conversion Factors

##### West Malaysia

- 1 picul = 60.48 kg.      1 mt. = 16.534 piculs
- 1 picul paddy = 25 gantangs padi
- 1 gantang padi = 2.41765 kg.
- 1 gantang rice = 3.62874 kg.
- 1 picul = 100 katis = 133.33 lbs.
- 1 kati = .60478 kg.
- 1 mt. = 1653.48 kati.

The British system of measurement was used in West Malaysia, although metric is now in use. To convert long tons to metric tons, multiply by 1.016047. To convert metric tons to long tons, multiply by 0.984207.

#### Money Unit

Malaysian dollar (M\$).

In 1980 1 US\$ = 2.22 Malaysian dollars official exchange rate

In 1980 1 US\$ = 2.18 Malaysian dollars free-market exchange rate

#### Sabah and Sarawak

Both Sabah and Sarawak use volume measures (gantang) for rice. Rough conversions to weight measures are provided for both paddy and rice. When changing from volume measures to the metric system, care should be taken to determine whether the rice is in milled or in rough form.

1 gantang paddy = 2.41765 kg.

1 gantang rice = 3.62874 kg.

1 picul = 60.4787 kilograms

1 mt. = 16.5348 piculs

1 kati = .60478 kilograms = 1.333 lbs.

1 mt. = 1653.48 katis

1 picul = 100 katis = 133.3 lbs.

#### Money Unit

Malaysian dollar (M\$).

## Glossary

Padi - Term used for paddy in Malaysia.

Mukim - Sub-district, the lowest administrative level in the collection of agricultural statistics.

Kendinga padi - A term used in Sabah and Sarawak to denote short-season padi produced under dry conditions in rotation with other crops.

## Acronyms

DID: Drainage and Irrigation Department (1931)

DOA: Department of Agriculture

FAMA: Federal Agricultural Marketing Authority (1965)

FOA: Farmers' Organization Authority (1973)

GMP: Guaranteed Minimum Price for Paddy (1949)

MADA: Muda Agricultural Development Authority

MARDI: Malaysian Agricultural Research and Development Institute

MAB: Malaysian Agricultural Bank (1969)

MAF: Ministry of Agriculture and Fisheries

NPRA: National Padi and Rice Authority (1971)

PRMB: Padi and Rice Marketing Board (1967)

## XIX: THE PHILIPPINES

### Rice Statistics in The Philippines

Administratively, the Philippines are divided into 12 important regions, including Ilocos; Cagayan Valley; Central Luzon; Southern Tagalog; Bicol; Central, Western and Eastern Visayas; and Eastern, Western, Northern and Southern Mindanao; and one metropolitan area, Manila. The Philippines are further subdivided into 75 provinces, 1,433 municipalities and municipal districts, and 33,776 barrios (villages).

When using Philippine statistical data, the reader should be careful to note that Philippine regional boundaries have changed through time. The number of regions has varied between 9 and 12, and provinces have been moved from one region to another. In most cases, statistical data have not been adjusted to account for these changes. A brief summary of important changes made since 1960 is presented below.

CHANGE	DATES
1. Province of Pangasinan moved from Central Luzon to Ilocos.	1973-1978
2. Province of Romblon moved from Western Visayas to Southern Tagalog.	1973-1978
3. Creation of Central Visayas. All provinces previously included in Eastern Visayas except Negros Oriental, which was previously included in Western Visayas.	1973-1978
4. Creation of Western Mindanao. All provinces previously included in Southern Mindanao.	1973-1978
5. Creation of Central Mindanao. All provinces previously included in Southern Mindanao, except Lanao del Norte and	

\*Thanks to Carol Ferguson, Robert Herdt, and Randolph Barker for comments.

(cont.)	CHANGE	DATE
	Lanao del Sur, which were previously included in Northern Mindanao.	1977-1978
6.	Province of Surigao del Sur moved from Northern Mindanao to Southern Mindanao.	1977-1978

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Source: Howard Bouis, "Rice Policy in the Philippines," Ph.D. thesis, Stanford University, 1982.

The statistical collection system in the Philippines is organized around a centralized coordinating core that oversees disparate units, much as in the United States. The Statistical Coordination office of the National Economic and Development Authority (NEDA) (formerly the National Economic Commission, NEC) is responsible for the development and enforcement of statistical procedure on a nationwide basis, as well as the formulation of classification systems and standards. Actual collection procedures are carried out by topic-specialized arms of the government bureaucracy in conjunction with other aspects of their respective work.

The Philippine system is unusual in that the collection of agricultural statistics is confined almost exclusively to a single agency, the Bureau of Agricultural Economics (BAEcon). This removes the problem of interagency comparison that users must face in many other Asian countries.

BAEcon, in the Ministry of Agriculture and Natural Resources,<sup>\*</sup> is responsible for the collection and compilation of agricultural statistics and

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<sup>\*</sup> Formerly The Department of Agriculture and Natural Resources, renamed The Ministry of Agriculture and Natural Resources in 1979 when the national government was reorganized under a parliamentary system.

other related functions, including specific research into and assessment of agricultural problems, and the operation of an agricultural marketing news service. BAEcon data collection is heavily oriented toward the survey of rice and corn crops at the expense of other "lesser" food and commercial crops. The Bureau has a long and continuous history under several different names, beginning in 1919 with the establishment of the Division of Farm Economics in the Bureau of Agriculture. It was subsequently shifted to the Bureau of Plant Industries, and finally to the Division of Statistics in the Department of Agriculture and Commerce in 1933. In 1940, the Statistics Division was joined with the Bureau of Census and Statistics. During this period, statistics were usually collected through farmer interviews or market surveys by field personnel of the provincial agricultural extension service as part of their normal duties. There was little or no standardization of collection procedures, so that interspatial or inter-year comparisons are of dubious value.

In 1953, an Agricultural Economics Division was formed and in 1963 raised to the status of "Bureau." BAEcon has a central office in Quezon, where planning of surveys and the collating and processing of data take place. Since 1963, BAEcon has been headed by a director with two assistant directors. One assistant manages Agricultural Estimates and Statistics, one Agricultural Economics Research. A field service staff at the regional and provincial levels serves directly under the director.

The first Crop and Livestock Survey (CLS) was initiated in 1954, with heavy emphasis on palay and corn, the two major Philippine food sources. Since that time, survey procedures have been modified considerably, but BAEcon says that the results are roughly comparable across time. Since 1958,

two-stage sampling has been used, with the barrio (village) as the primary stage and the farm household as the secondary stage. Barrios are further stratified by cropping pattern and farm area. The survey was an annual activity, covering 2,300-2,500 barrios and 10,000-14,000 farm households. Most field work was carried out during May-June. Data collection was done by field staff, who interviewed heads of farming households chosen by random selection from barrios divided according to prevalent cropping systems (pure palay, pure maize, etc.). The field staff filled out standardized survey questionnaires that were turned into provincial offices for collation.

In 1968, the CLS was fused with other surveys of rural labor, wages, and prices to form the quarterly Integrated Agricultural Survey (IAS). In 1973, the results of the IAS were published two times each year, which allowed calendar-year estimates in addition to the traditional crop-year estimates usually used.

There is a wide variety of rice statistics reported at many levels. All rice statistics, except retail and wholesale prices and imports and exports, are recorded in crop years, July 1-June 30. Data collected include rice area harvested (planted prior to 1954/55) in hectares, palay (rough rice) production in metric tons or cavans, and yield per hectare of palay in cavans. Data is available on a national and regional basis and for 14 important rice-producing provinces. A cavan of palay was officially set equal to 44 kg. until 1961, 45 kg. from 1961-1965, 46 kg. from 1966-1972, and 50 kg. from 1973. A cavan of rice was equal to 57 kg. until 1941, when it was reduced to 56 kg. Rice area is subdivided by cropping patterns, including lowland first and second crop, and upland. Since 1966/67, lowland first crop refers to that area harvested July-December and lowland second

crop to that area harvested January-June. Prior to this time, lowland rice was divided into lowland planted during the rainy season and included upland plantings and lowland planted during the dry season. However, some areas of the Philippines have evenly distributed rainfall. In that case, the larger area was regarded as lowland rainy season crop. Production statistics include double-cropped area. Statistics for high-yielding varieties of rice--area, production, yield, and type--are available since 1968. In addition to annual estimates of rice area, yield, and production, crop forecasts are regularly made to aid policy makers in making short-term decisions, and crop damage reports are made after natural disasters.

TABLE XIXa

PHILIPPINES	Total area planted (A) '000' ha	Rice prod'n. paddy (A) '000' mt	Rice area planted (A) '000' ha	Rice yield paddy (A) mt./ha	Rice area irrigated '000' ha
Year	1	2	3	4	5
1903	1299(E)	505	593(F)	0.85	
1904					
1905					
1906					
1907					
1908		768	1156	0.66	
1909	2548(H)	812	1192	0.68	
1910	2148	884	1044	0.85	
1911	3315	501	1079	0.46	
1912	2372	905	1141	0.79	
1913	2600	840	1245	0.67	
1914	2543	658	1131	0.58	
1915	2621	771	1141	0.68	
1916	2721	1044	1226	0.85	
1917	2952	1539	1368	1.13	
1918	3005	1453	1381	1.05	
1919	3309	1563	1485	1.05	
1920	3548	1784	1673	1.07	
1921	3460	1867	1661	1.12	
1922	3526	1883	1676	1.12	
1923	3548	1788	1738	1.03	
1924	3542	1963	1726	1.14	
1925	3609	2055	1756	1.17	
1926	3706	2178	1807	1.21	61(M)
1927	3659	2197	1787	1.23	
1928	4013	2191	1775	1.23	67
1929	4082	2270	1813	1.25	
1930	4044	2184	1791	1.22	
1931	4074	2081	1782	1.17	
1932	4242	2105	1854	1.14	
1933	4319	2332	2004	1.16	
1934	4242	2016	1964	1.03	
1935	4497	1858	2049	0.91	
1936	4525	2421	2061	1.17	
1937	4411	2303	1912	1.20	
1938	4850	2297	1965	1.17	
1939	2993(S)	2363	2080	1.14	516(T)

TABLE XIXa (cont'd)

PHILIPPINES	Rice imports (B) milled '000' mt	Rice exports (B) milled '000' mt	Population midyear (C) '000' persons	Procurement price (A) paddy peso/mt
Year	6	7	8	10
1900	146			
1901	171			
1902	290			
1903	334		7639*(G)	
1904	266		7659	
1905	219		7699	
1906	127		7761	
1907	119		7844	
1908	158		7964	
1909	167		8095	
1910	197		8220	
1911	184		8367	
1912	301		8576	
1913	87	-	8786	
1914	97	-	9016	
1915	218	-	9269	
1916	190	-	9542	
1917	147	-	9836	
1918	184	-	10151*	
1919	51	-	10324	
1920	77	-	10445	
1921	60	-	10673	
1922	42	-	10908	
1923	66	1	11152	
1924	151	-	11405	
1925	101	-	11666	
1926	70	1	11935	
1927	12	1	12212	
1928	44	1	12498	
1929	105	-	12792	
1930	11	-	13094	
1931	12	1	13405	
1932	13	-	13724	
1933	20	-	14051	
1934	7	-	14387	
1935	7	3	14731	
1936	92	-	15084	
1937	74	2	15445	
1938	9	-	15814	
1939	85	-	16512*	57(U)

TABLE XIXa (cont'd)

PHILIPPINES	Wholesale rice price (B) main market milled peso/mt	Retail rice price (B) main market milled peso/mt	Farm wage rate (A) peso/day	Domestic apparent per capita paddy availability (D) kg/cap/yr
Year	11	12	13	14
1903				66
1904				
1905				
1906				
1907				
1908				96
1909				100
1910				108
1911				60
1912				106
1913	94	106(I)		96
1914	96(J)	102		73
1915	102	110		83
1916	111(K)	106		109
1917	122	127		156
1918	163	200		143
1919	241	272		151
1920	246	289		171
1921	133	157		175
1922	135	157		173
1923	149	170		160
1924	170	183		172
1925	165	187	0.82(L)	176
1926	164			182
1927	133		0.98	180
1928	138			175
1929	156			177
1930	109(N)			167
1931	82		0.86(O)	155
1932	74	89(P)		153
1933	83	103		166
1934	71	94		140
1935	89	102		126
1936	114	127	0.76(Q)	161
1937	97	115	0.98	149
1938	113	136	1.01	145
1939	113	136	0.99	146

TABLE XIXa (cont'd)

PHILIPPINES	First crop low- land and upland area harvested (A) '000' ha	First crop low- land and upland rice prod'n. (A) paddy '000' mt	First crop low- land and upland rice yield (A) paddy mt/ha	Planted ha/person
Year	15	16	17	18
1909				.31
1910				.26
1911				.39
1912				.28
1913				.29
1914				.28
1915				.28
1916				.28
1917				.28
1918				.30
1919				.30
1920				.32
1921				.34
1922				.32
1923				.32
1924				.32
1925				.32
1926				.31
1927				.31
1928				.30
1929				.32
1930				.32
1931				.31
1932				.30
1933				.31
1934				.31
1935				.29
1936				.30
1937	1715	1730	1.01	.28
1938	1534(R)	2012(R)	1.31(R)	.31
1939	1620	2113	1.30	.19

TABLE XIXb

PHILIPPINES	Total area planted (A) '000' ha	Rice prod'n. (A) paddy '000' mt	Rice area harvested (A) '000' ha	Rice yield (A) paddy mt/ha
Year	1	2	3	4
1940	3526	2382	2289	1.04
1941	3317	2442	2319	1.05
1942	n.a. (W)	n.a. (W)	n.a. (W)	n.a. (W)
1943	n.a.	n.a.	n.a.	n.a.
1944	n.a.	n.a.	n.a.	n.a.
1945	3910	1623	1650	0.98
1946	4460	2088	1880	1.11
1947	4656	2241	2026	1.11
1948	4920	2491	2164	1.15
1949	5075	2606	2214	1.18
1950	5241	2616	2252	1.16
1951	5614	2831	2466	1.15
1952	6061	3144	2655	1.18
1953	6140	3182	2645	1.20
1954	6434	3203	2656	1.21
1955	6817	3273	2742	1.19
1956	7004	3346	2768	1.21
1957	6997	3204	3154	1.02
1958	7910	3685	3329	1.11
1959	7596	3740	3306	1.13
1960	7833	3705	3198	1.16
1961	7917	3910	3179	1.23
1962	7935	3967	3161	1.25
1963	7956	3843	3087	1.24
1964	8252	3993	3200	1.25
1965	8296	4073	3109	1.31
1966	8511	4094	3096	1.32
1967	8806	4561	3304	1.38
1968	8919	4445	3332	1.33
1969	8946	5233	3113	1.68
1970	9097	5343	3113	1.72
1971	9382	5100	3246	1.57
1972	9213	4415	3112	1.42
1973	10117	5594	3437	1.63
1974	10760	5660	3539	1.60
1975	11460	6160	3579	1.72
1976	11811	6456	3548	1.82
1977	12179	6895	3509	1.96
1978	12390	7197	3468	2.08
1979	12123	7836	3637	2.15
1980	12000	7723	3459	2.23
1981		8108	3433	2.36

TABLE XIXb (cont'd)

PHILIPPINES	Rice area irrig. (A) '000' ha	Rice imports milled (B) '000' mt	Rice exports (B) milled '000' mt	Population midyear (C) '000' persons
Year	5	6	7	8
1940		39	-	16460
1941		12	-	16774
1942		n.a.	n.a.	17093
1943		n.a.	n.a.	n.a.
1944		n.a.	n.a.	n.a.
1945		15	-	18090
1946		115	-	18434
1947	415	73(X)	-(X)	18786
1948		25	-	19144*
1949		39	-	19674
1950		4	10	20275
1951		130	-	20894
1952		63	-	21533
1953		-	1	22191
1954		43	-	22868
1955		64	-	23568
1956	596(BB)	42	-	24288
1957	720	78	-	25030
1958	753	231	-	25795
1959	1016	7	-	26584
1960	960	-	2	27387*
1961	987	186	-	28232
1962	1014	-	-	29062
1963	930	256	-	29937
1964	958	300	-	30839
1965	960	569	-	31768
1966	1171	108	-	32725
1967	1309	291	53(DD)	33711
1968	1483	-	40(DD)	34726
1969	1346	-	1(FF)	35772
1970	1470	-	2	36849
1971	1332	368	-	37959
1972	1241	445	7	39102
1973	1494	312	5	40280
1974	1412	169	-	41493
1975	1496	145	-	42240*(GG)
1976	1489	55	-	43456
1977	1515	31	15	44673
1978	1466	-	48	45888
1979	1606	-	127	47104
1980	1625	-	231	48317*

TABLE XIXb (cont'd)

PHILIPPINES	Farm-harvest price (A) paddy peso/mt	Procurement price (A) paddy peso/mt	Wholesale rice price (B) main market milled peso/mt
Year	9	10	11
1940	64		103
1941			102
1942			
1943			
1944			
1945		316	930
1946	524	273	780
1947		227	494
1948		318	490
1949		233	492
1950		250	390(z)
1951		223	459
1952		219	434
1953		198	342
1954		201	333
1955	190(AA)	176	356
1956	190	201	341
1957	220	269	392
1958	230	210	431
1959	180	191	324
1960	200		364
1961	230	242	454
1962	220	254	407
1963	270	310	472
1964	310	293	569
1965	300	389	552
1966	340	392	674
1967	350	384	683
1968	330	385	637
1969	340	447	600
1970	360	435	720
1971	550	470	915
1972	610	570	1062
1973	790	700	1242
1974	890	900	1781
1975	920	1000	1810
1976	960	1100	1914
1977	1000	1100	1959
1978	980	1100	1912
1979	1005	1300	
1980	1080	1400	
1981	1230	1500	

TABLE XIXb (cont'd)

PHILIPPINES	Retail rice price (B) main market milled peso/mt	Farm wage rate (A) peso/day	Domestic apparent per capita paddy availability (D) kg/cap/yr
Year	12	13	14
1940	132	0.94	145
1941	114	0.56(v)	145
1942			
1943			
1944			
1945	1081		90
1946	873	1.71	113
1947	555	2.05	119
1948	640	1.66	130
1949	555	1.73	132
1950	460	1.70	129
1951	510	1.71	135
1952	490	1.94	146
1953	400	2.07	143
1954	380	2.14	140
1955	390	2.15	139
1956	390	1.90	138
1957	420	2.74(cc)	128
1958	490	2.79	143
1959	390	2.77	141
1960	430	2.79	135
1961	470	2.78	138
1962	440	2.79	137
1963	520	3.05	128
1964	640	2.93	129
1965	610	2.93	128
1966	750	3.12	125
1967	840	3.41	135
1968	730	3.42	128
1969	750	3.13	146
1970	800	3.20	145
1971	1080	3.64	134
1972	1150	3.78	113
1973	1510	4.40	139
1974	1980	6.41	136
1975	1900	7.46	146
1976	2030	8.97	149
1977	2100	9.89	154
1978	2100	9.50	157
1979	2360	10.44	166
1980	2450	11.72	160

TABLE XIXb (cont'd)

PHILIPPINES	First crop low- land and upland rice area harvested (A) '000' ha	First crop low- land and upland rice prod'n. (A) palay - '000' ha	First crop low- land and upland rice yield (A) palay - mt/ha	Planted ha/person
Year	15	16	17	18
1940				.20
1941	2165	2328	1.08	.20
1942				
1943				
1944				
1945				.22
1946				.24
1947	1740(Y)	1956(Y)	1.12(Y)	.25
1948				.26
1949				.26
1950				.26
1951				.27
1952				.28
1953				.28
1954				.28
1955	2413	2944	1.22	.29
1956				.29
1957				.28
1958	2919	3288	1.13	.31
1959				.28
1960	2689	3100	1.15	.29
1961	2680	3284	1.23	.28
1962	2711	3435	1.27	.27
1963	2605	3215	1.23	.26
1964	2708	3349	1.24	.27
1965	2615	3469	1.33	.26
1966	2396	3214	1.34	.26
1967	2722(EE)	3090(EE)	1.14(EE)	.26
1968	2449	3234	1.32	.26
1969	2701	3680	1.36	.25
1970	2081	3514	1.69	.25
1971	2153	3244	1.51	.25
1972	2226	3045	1.37	.23
1973	2406	3781	1.57	.25
1974	2404	3518	1.46	.26
1975	2396	3968	1.66	.27
1976	2388	4091	1.71	.27
1977	2450	4591	1.87	.27
1978				.27
1979				.26

Notes to Appendix Table XIXa and XIXb: The Philippines

A/ Philippine agricultural statistics are reported in crop years running July 1-June 30.

B/ Prices, imports, and exports are assumed to be in calendar years (January-December) unless otherwise indicated.

C/ A \* indicates a census year.

D/ Per capita availability is calculated based on a July 1-June 30 crop year and a July 1 population estimate.

E/ 1903: Area of cultivated land is based on the 1903 agricultural census.

F/ 1903/04-1954/55: Rice area refers to rice area planted. After crop year 1954/55, all area is reported as harvested area.

G/ 1903-1980: Population is as of July 1 of the year in question.

H/ 1909/10-1980/81: Total area planted includes palay, corn, banana, mango, pineapple, other fruit and nut, citrus, root crop, vegetable, bean and pea, coffee, cacao, peanut, other food crop, coconut, sugar cane, abaca, tobacco, ramie, rubber, maguey, and other commercial crop area. These figures include double-cropped area.

I/ 1913-1925: Main-market (Manila) retail rice price is for first-class rice from weekly reports of market masters of Divisoria, Quinta, Paco, Sampaloc, Tondo, Obrero, Paañaque, and San Andres markets.

J/ 1914-1915: These prices form a continuous series with the preceding and following wholesale prices except 1 cavan set equal to 56 kg.

K/ 1916-1929: Main-market wholesale rice price is for native second-class white rice. Figures collected by the Bureau of Agriculture.

L/ 1925/26-1940/41: Farm wage rates are for male laborers.

M/ 1926/27-1938/39: Includes all area irrigated by "irrigation systems." We may assume that most of this area is rice area. Data from the Bureau of Public Works.

N/ 1930-1949: Average of Macan first- and second-class white rice price.

O/ 1931/1932: Farm wage rate is for common laborers.

P/ 1932-1980: Retail rice price is for Macan (or equivalent) first-class milled rice.

Q/ 1936/37-1940/41: Farm wage rate is for unskilled labor.

R/ 1938/39-1941/42: Lowland area only.

S/ 1939: Based on the 1939 Census of Agriculture, the net area cultivated was 3954 thousand hectares. Total gross area cultivated was 4,771,638 hectares, yielding a multiple cropping index of 121.

T/ 1939: Refers to total area irrigated from the 1939 census.

U/ 1939/40-1981/82: Procurement price is the average value per metric ton of palay purchased by the government throughout the Philippines at the support price from farmers or through the quedan system. Quedan is a receipt issued by bonded warehouses to producers who have placed a portion of their palay harvest in such warehouses. Quedan may be redeemed by farmers at named banks.

V/ 1941/42-1956/57: Average farm wage rates for male and female laborers includes two meals.

W/ 1942/43-1944/45: No official estimates for area, yield, or production were prepared during the Japanese occupation.

X/ 1947-1980: Includes all varieties of rice and broken rice.

Y/ 1947/48-1966/67: We have chosen to combine lowland first crop and upland because these crops are, in general, grown during the wet season. However, in some areas where rainfall is quite evenly distributed, it is impossible to distinguish between a "wet" and "dry" season. In those cases, the largest crop is deemed the first crop, the smaller the second. All lowland crops require constant standing water supplies.

Z/ 1950-1978: Main-market wholesale rice price is for Macan first-class rice.

aa/ 1955/56-1981/82: Farm-harvest price is for Macan (or equivalent) ordinary rice.

bb/ 1956/57-1980/81: Irrigated area refers to all rice area irrigated by man-made means, including mechanical and gravity-fed systems. Prior to 1953/54, area irrigated is planted area; from 1953/54 area irrigated is harvested area.

cc/ 1957/58-1980/81: Average farm wage rate is for male and female laborers and does not include meals.

dd/ 1967-1968: Rice exports include reexports.

ee/ 1967/68-1977/78: From 1967/68, lowland first crop refers to that area harvested July-December and lowland second crop to that area harvested January-June. Thus, the data for 1966 and before do not form a continuous series with those for 1967 to the present.

ff/ 1969-1973: Rice exports were mainly made for seed purposes.

gg/ 1975-1980: Population estimates based on 1975 and 1980 censuses and constructed by NCSO, Population Studies Division.

Sources of Data for Appendix Tables XIXa and XIXb: The Philippines

1. Total Area Planted

1903/04: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1947).

1909/10-1927/28: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: 1922-29).

1928/29-1978/79: Philippines. National Economic and Development Authority, Philippine Statistical Yearbook (Manila: 1980).

1979/80-1980/81: Philippines. Bureau of Agricultural Economics (mimeo).

2. Rice Production

1903/04: Venegas, Ernesto and Ruttan, Vernon, "An Analysis of Rice

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NOTE: In Philippine source material, agricultural statistics are frequently labeled by the year in which the crop period ends, i.e., crop year 1915/1916 is labeled 1916, rather than 1915, which is standard for most other countries. Agricultural data in this table are labeled in standard format, crop year 1915/16 is called 1915.

Production in the Philippines," Economic Research Journal 11 (December 1964), pp. 159-180.

1908/09: Bouis, Howarth, "Rice Policy in the Philippines," Ph.D. thesis, Stanford University, 1982.

1909/10-1926/27: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1918-1930).

1927/28-1946/47: Philippines. Bureau of the Census and Statistics, Year-book of Philippine Statistics (Manila: Bureau of Printing, 1941, 1947).

1947/48-1978/79: Philippines. National Economic and Development Authority, Philippine Statistical Yearbook (Manila: 1980).

1979/80-1981/82: Philippines. Bureau of Agricultural Economics (mimeo).

### 3. Rice Area

1903/04: Venegas, Ernesto and Ruttan, Vernon, "An Analysis of Rice Production in the Philippines," Economic Research Journal 11 (December 1964), pp. 159-180.

1908/09: Bouis, Howarth, "Rice Policy in the Philippines," Ph.D. thesis, Stanford University, 1982.

1909/10-1926/27: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1918-1930).

1927/28-1946/47: Philippines. Bureau of the Census and Statistics, Year-book of Philippine Statistics (Manila: Bureau of Printing, 1941, 1947).

1947/48-1978/79: Philippines. National Economic and Development Authority, Philippine Statistical Yearbook (Manila: 1980).

1979/80-1981/82: Philippines. Bureau of Agricultural Economics (mimeo).

### 4. Rice Yields

1903-1981: Rice yields are computed by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1926/27-1928/29: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1930).

1939, 1947: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1947).

1956/57-1978/79: Ongkingco, P. S.; Galvez, J.; and Rosegrant, M., "Irrigation and Rice Production in the Philippines: Status and Projection," Rice Policies in Southeast Asia Project, Working Paper No. 3. Data supplied by BAEcon.

1979/80-1980/81: Philippines. Bureau of Agricultural Economics (mimeo).

6. Rice Imports

1900-1927: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1930).

1928-1946: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1947).

1947-1954: Philippines. Bureau of the Census and Statistics, Foreign Trade Statistics of the Philippines (Manila).

1955-1973: Apiraksirikul, Sumalee, "Rice Trade Policy as it Relates to National Objectives in the Philippines," Master's thesis, School of Economics, University of the Philippines, n.d.

1974-1977: Philippine Council for Agricultural and Resources Research, Data Series on Rice Statistics in the Philippines (Los Banos, Philippines: 1981).

1978-1980: Philippines. National Food Authority, "Rice Imports by Country of Origin," unpublished data.

7. Rice Exports

1913-1927: Philippines. Bureau of Commerce and Industry, Statistical

Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1918-30).

1928-1946: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1947).

1947-1978: Philippines. Bureau of the Census and Statistics, Foreign Trade Statistics of the Philippines (Manila: 1947-1979).

1979-1980: Bureau of the Census and Statistics.

8. Population

1903-1974: Anden, Teresa and Palacpac, Adelita, Data Series on Rice Statistics in the Philippines (Los Banos, Philippines: International Rice Research Institute, 1976).

1975-1980: Philippines. National Economic and Development Authority, 1981 Philippine Statistical Yearbook (Manila: 1981).

9. Farm-Harvest Price

1940/41-1946/47: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1947).

1955/56-1981/82: Philippines. Bureau of Agricultural Economics, "Prices Received and Paid by Farmers."

10. Procurement Price

1939/40-1970/71: Mears, Leon et al., Rice Economy of the Philippines (Quezon City: University of the Philippines Press, 1974), pp. 290-291.

1971-1981: Bureau of the Census and Statistics.

11. Wholesale Rice Price (Main Market)

1913-1929: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1918-1930).

1914, 1915, and 1930-1949: Mears, Leon et al., Rice Economy of the Philippines (Quezon City: University of the Philippines Press, 1974), pp. 338-339.

1950-1978: Central Bank of the Philippines, unpublished data.

12. Retail Rice Price (Main Market)

1913-1925: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1918-1929).

1932-1934: FAO, World Rice Economy in Figures, 1909-1963 (Rome: 1965).

1935-1940: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1941, 1947).

1941-1948: Philippines. Division of Agricultural Economics, Philippine Agricultural Statistics, Vol. 1 (1954) (Manila: 1955).

1949-1980: Central Bank of the Philippines, unpublished data.

13. Farm Wage Rate

1925-1927: Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: Bureau of Printing, 1926, 1930).

1931/32-1946/47: Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1947).

1947/48-1950/51: Philippines. Bureau of the Census and Statistics, Journal of Philippine Statistics (Manila).

1951/52-1956/57: Philippines. Bureau of the Census and Statistics, Handbook of Philippine Statistics, 1903-1959 (Manila: Bureau of Printing, 1960).

1957/58-1980/81: Philippines. Bureau of Agricultural Economics, Farm Wages (Manila).

14. Domestic Apparent Per Capita Rice Availability  
1909-1980: Availability calculated by dividing palay production (2) by  
midyear population estimate (8) on an annual basis.
  
15. First Crop Lowland and Upland Rice Area  
1937/38-1941/42: Philippines. Bureau of the Census and Statistics,  
Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1941,  
1947).  
1947/48-1976/77: Philippine Council for Agricultural and Resources  
Research, Data Series on Rice Statistics in the Philippines (Los  
Banos, Philippines: 1981).  
1977/78: Philippines. Bureau of Agricultural Economics, unpublished data.
  
16. First Crop Lowland and Upland Rice Production  
1937/38-1941/42: Philippines. Bureau of the Census and Statistics,  
Yearbook of Philippine Statistics (Manila: Bureau of Printing, 1941,  
1947).  
1947/48-1976/77: Philippine Council for Agricultural and Resources  
Research, Data Series on Rice Statistics in the Philippines (Los Banos,  
Philippines: 1981).  
1977/78: Philippines. Bureau of Agricultural Economics, unpublished data.
  
17. First Crop Lowland and Upland Rice Yield  
1937/38-1977/78: Rice yields are computed by dividing lowland rice pro-  
duction (16) by lowland rice area (15) on an annual basis.

Country Sources of Basic Data: The Philippines

1. Philippines. Bureau of Commerce and Industry, Statistical Bulletin of the Philippine Islands (Manila: 1918-1930), historical. (Annual).
2. Philippines. Bureau of the Census and Statistics, Yearbook of Philippine Statistics (Manila: Bureau of Printing). (historical). Republished on a regular basis as Philippine Statistical Yearbook from 1966.
3. Anden, Teresa and Palacpac, Adelita, Data Series on Rice Statistics in the Philippines (Los Banos, Philippines: Philippine Council for Agriculture and Resources Research, 1981).
4. Philippines. Bureau of Agricultural Economics, Crop, Livestock and Natural Resources Statistics (Manila). (Annual).
5. Philippines. Bureau of the Census and Statistics, Foreign Trade Statistics of the Philippines (Manila). (Annual).
6. Philippines. National Economic and Development Authority, Philippine Statistical Yearbook (Manila). (Annual).
7. Philippines. Bureau of Agricultural Economics, Farm Wages (Manila). (Annual).
8. Philippines. Bureau of Agricultural Economics, "Prices Received and Paid by Farmers." (mimeos).

Useful Secondary Sources

1. Apiraksirikul, Sumalee, "Rice Trade Policy as it Relates to National Objectives in the Philippines," Master's thesis, School of Economics, University of the Philippines, n.d.
2. Mears, Leon et al., Rice Economy of the Philippines (Quezon City: University of the Philippines Press, 1974).

3. Huke, Robert, Shadows on the Land: An Economic Geography of the Philippines (Manila: Bookmark, Inc., 1963).
4. World Bank, "Philippines Sector Study: Grain Production Policy Review," Report No. 2192a-PH, January 22, 1979.
5. Encarnación, José Jr., Philippine Economic Problems in Perspective (Manila: Institute of Economic Development and Research, School of Economics, University of the Philippines, 1976).
6. Philippines. Department of Agriculture and Natural Resources, The Philippine Journal of Agriculture (Manila: Bureau of Printing).
7. Bouis, Howarth, "Rice Policy in the Philippines," Ph.D. thesis, Stanford University, February 1982.

#### Acronyms

BAEcon:	Bureau of Agricultural Economics
BCS:	Bureau of Census and Statistics (changed to NCSO)
BPI:	Bureau of Plant Industry
CB:	Central Bank of the Philippines
CLS:	Crop and Livestock Survey (replaced by IAS in 1968)
DANR:	Department of Agriculture and Natural Resources
IAS:	Integrated Agricultural Survey
IRRI:	International Rice Research Institute
NARIC:	National Rice and Corn Corporation (replaced by RCA in 1962 and by NGA in 1972)
NCSO:	National Census and Statistics Office (formerly BCS)
NEDA:	National Economic and Development Authority
NFA:	National Food Authority (formerly NGA, became NFA in 1981)

NGA: National Grain Authority (formerly RCA)  
NIA: National Irrigation Authority  
RCA: Rice and Corn Administration (formerly NARIC)  
RCS: Rice and Corn Survey (formerly IAS)

Conversion Factors

1 cavan palay = 50 kg. palay\*  
1 cavan rice = 56 kg. rice  
1 ganta rice = 2.38 kg.  
1 cavan rice = 24.99 gantas rice  
1 mt. palay = 20 cavans palay  
1 mt. rice = 17.86 cavans rice

Official Rice Milling Rates:

1902/03 - 1966/67	67.91 percent
1967/68 - 1969/69	66.18 percent
1969/70 - Present	67.45 percent

Money Unit

money unit = peso

In 1980 1 US\$ = 7.60 peso official exchange rate

In 1980 1 US\$ = 7.98 peso free-market exchange rate

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\*The cavan and ganta (retail) are volume measures. Each has been assigned a specific official kg. weight, which has varied through time. This has obviously been a source of error, especially before World War II when volume measures were not adequately standardized.

XX. THAILAND\*

Rice Statistics in Thailand

Thailand can be divided into four primary regions on the basis of geography--the Central Plain, the North, the Northeast, and the South. Administratively, Thailand is subdivided into 72 changwats (provinces). Changwats are administered by governors who are civil servants appointed by the Ministry of the Interior. Beneath the changwat are 578 amphoes (district). Beneath the amphoes are 5,138 tambons (a group of villages). Tambons are administered by chiefs elected by the village headmen. Below the tambon is the muban (village) headed by an elected puyaiban (village headman). Most agricultural statistical collection is carried out at the village level under the supervision of the puyaiban.

Until recently, like most other Asian countries, Thailand collected rice production and area statistics through more than one agency. The two most important agencies were the National Statistics Office (NSO) and the Ministry of Agriculture (Krasūang Kasēt). Since 1975, NSO no longer has any responsibility for agricultural statistics. The Royal Irrigation Department and the National Income Accounts Division of the National Economic and Social Development Board also occasionally release statistical estimates.

Although the Ministry of Agriculture rice series predates NSO collection of rice statistics, we will consider NSO first. NSO regularly reported rice area, production, and yield. Figures that are available are on a calendar-year basis since 1940, and crop-year basis prior to 1940. In 1966,

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\*Thanks to Robert Tetro and Robert Ralston for comments.

NSO began a program of yearly crop cutting at the village and changwat (province) level. Survey teams used stratified multi-stage probability sampling in sample villages to determine yields. Area was determined via a combination of subjective interviews and survey measurement. Five to 10 percent of all villages were surveyed.

The Ministry of Agriculture (MOAC) is responsible for all aspects of rice production, including the collection of statistics, until the rice passes through the farm gate. The MOAC has reported rice production since at least 1937 down to the changwat level. In 1955, the MOAC issued a series of three standardized forms to be filled out individually in the village for each farmer by the village headman (puyaiban). This system is commonly referred to as the village headman reporting system. The completed forms, bearing information regarding area planted, by what method, crop damage, area harvested and total production, are sent upward to the MOAC. Agricultural extension agents help the process run smoothly. This system has some obvious problems in that many persons are involved in the collection process, multiplying the chance for errors, especially during tabulation.

The MOAC uses the crop year (April 1-March 31) to report agricultural statistics. Statistics reported include rice area harvested, planted, transplanted and broadcast, paddy production, and, more recently, main crop area and production. Although Thai statistical series are usually labeled "rice" production, the rice is actually in rough (paddy) form. Ministry of Agriculture planted and harvested rice areas are available back to 1937 and broadcasted and transplanted area back to 1955. Rice area is reported in rai, the Thai land measurement equivalent to 0.16 ha. Paddy production

is reported in metric tons or, in older sources, in piculs. Figures are easily available down to the changwat level.

There are, of course, pros and cons for both the NSO and MOAC rice area and production series. Prior to 1966 and the inception of the NSO crop-cutting surveys, the Ministry of Agriculture series is our only choice for rice production as NSO used Ministry of Agriculture estimates. After 1966 and up to 1975, we have chosen to use the NSO series for several reasons. First, the NSO obtains its numbers from objective surveys. This should help remove the possible bias introduced by local underreporting and staff errors. In fact, NSO found that its production figures were about 16 percent larger than the comparable MOAC numbers, except in 1962-63 when the MOAC and NSO jointly collaborated during the Agricultural Census. Thus, in Table XX we find a large jump between the 1965 MOAC estimate and the 1966 NSO estimate for paddy production. Both series show similar rice area so we use Ministry of Agriculture numbers prior to 1966 and NSO numbers from 1966 to 1975. (For further discussion, see: Gaesuwan; Siamwalla; and Welsch, Thai Rice Production and Consumption Data 1947-1970, Thailand Rice Project, Working Paper No. 2 [Bangkok: Kasetsart University, 1974].)

TABLE XXa

THAILAND	Rice prod'n. paddy	Rice area planted	Rice yield paddy	Total area irrigated	Rice imports milled
Year	'000' mt.	'000' ha	mt/ha	'000' ha	'000' mt
	2	3	4	5	6
1901/02					-(A)
1902/03		1147(B/C)		48(D)	-
1903/04		1342		48	-
1904/05		1358		48	-
1905/06		1458		48	-
1906/07		1287		48	-
1907/08	2582(C/G)	1493(G)	1.73(C/G/H)	48	-
1908/09	2368	1466	1.62	48	-
1909/10	3044	1617	1.88	48	-
1910/11	2953	1501	1.97	48	-
1911/12	2881	1572	1.83	48	-
1912/13	3670	1975	1.86	48	-
1913/14	2853	2162	1.32	48	-
1914/15	3102	2038	1.52	48	-
1915/16	3267	2072	1.58	48	-
1916/17	3786	2169	1.75		-
1917/18	2989	2223	1.34		-
1918/19	3384	2159	1.57		-
1919/20	2270	2479	0.92		-
1920/21	4278	2447	1.75		-
1921/22	4232	2596	1.63		-
1922/23	4340	2527	1.72		-
1923/24	4399	2687	1.64		-
1924/25	4942	2777	1.78		-
1925/26	4193	2736	1.53	157	-
1926/27	5226	2895	1.81		-
1927/28	4564	2928	1.56		-
1928/29	3882	2850	1.36		-
1929/30	3875	3036	1.28		-
1930/31	4826	3180	1.52		-
1931/32	4068	3091	1.32		-
1932/33	5116	3214	1.59	267	-
1933/34	5008	3245	1.54	317	-
1934/35	4598	3337	1.38		-
1935/36	4727	3378	1.40		-
1936/37	3380	3258	1.04		-
1937/38	4556	3370	1.35	327	-
1938/39	4524	3507	1.29		-
1939/40	4560	3464	1.32		-

TABLE XXa (cont'd)

THAILAND	Rice exports milled '000' mt	Population '000' persons	Wholesale rice price milled main market Bangkok baht/mt	Farm wage rate baht/day	Domestic apparent per capita paddy availability kg/cap/yr
Year	7	8	11	13	14
1901/02		7409			
1902/03		7491			
1903/04	598(C/E/F)	7573			
1904/05	870	7657			
1905/06	872	7741			
1906/07	866	7826			
1907/08	802	7912			326
1908/09	926	7999			296
1909/10	961	8087			376
1910/11	1055	8176			361
1911/12	632	8266			349
1912/13	593	8379			438
1913/14	1183	8492			336
1914/15	1104	8607	90(I)	0.75(J)	360
1915/16	1127	8724	98	1.00	374
1916/17	1187	8843	103	1.00	428
1917/18	1125	8962	118	1.00	334
1918/19	852	9084	202	1.00	373
1919/20	445	9207	363	1.00	247
1920/21	280	9409	144	0.80	455
1921/22	1260	9615	134	0.80	440
1922/23	1265	9825	119	0.80	442
1923/24	1335	10041	138	0.80	438
1924/25	1163	10260	153	0.80	482
1925/26	1376	10485	150	0.80	400
1926/27	1308	10715	157	0.80	488
1927/28	1720	10950	139	0.80	417
1928/29	1480	11190	131		347
1929/30	1132	11506	132		337
1930/31	1027	11747	111		411
1931/32	1332	12094	66		336
1932/33	1672	12452	64		411
1933/34	1663	12819	58		391
1934/35	2022	13198	56		348
1935/36	1502	13588	66		348
1936/37	1559	13989	75		242
1937/38	1102	14464	68		315
1938/39	1555	14698	65		308
1939/40	1892	14975	64		305

TABLE XXb

THAILAND	Arable area '000' ha	Rice prod'n. paddy '000' mt	Rice area planted '000' ha	Rice yields paddy mt/ha	Rice area irrigated '000' ha
Year	1	2	3	4	5
1940		4923(K)	3807(K)	1.29(K)	
1941		5120	3969	1.29	
1942		3854	4399	0.88	646(L)
1943		5536	4315	1.28	
1944		4928	4240	1.16	
1945		3572	3942	0.91	
1946		4442	3982	1.12	
1947		5506	4825	1.14	608
1948		6835	5212	1.31	
1949		6684	5268	1.27	
1950		6782	5540	1.22	
1951		7325	5959	1.23	
1952		6602	5368	1.23	934
1953		8239	6172	1.33	
1954		5709	5557	1.03	
1955		7334	5770	1.27	
1956		8297	6024	1.38	
1957		5570	5063	1.10	
1958		7053	5752	1.23	1287(Q)
1959		6770	6065	1.12	1211
1960	10077	7834	5921	1.32	1363
1961		8177	6179	1.32	1404
1962	10088	9279	6659	1.39	1574
1963	10604	10029	6601	1.52	1662
1964	11267	9558	6540	1.46	1635
1965	11415	9199	6554	1.40	1744
1966	12865	13500(U)	7481(U)	1.80(U)	1745
1967	13280	11190	6661	1.68	1744
1968	13400	12499	7088	1.76	1735
1969	13500	13410	7584	1.77	1764
1970	13808	13570	7494	1.81	1758
1971	15224(V)	13744	7527	1.83	1853
1972		11794	7204	1.64	1791
1973	18073	13675	7710	1.77	1808
1974		13140	7558	1.74	1829
1975/76		15758(Y)	8411(Y)	1.87(Y)	
1976/77		16541(Z)	8439(Z)	1.96(Z)	1914
1977/78	18207	12290	8399	1.46	
1978/79	14955(AA)	15844	9277	1.71	
1979/80		15389	8934	1.72	
1980/81		17144	9804	1.75	
1981/82		19250	9800	1.96	2560

TABLE XXb (cont'd)

THAILAND	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Farm-harvest price paddy baht/mt	Rice premium rate 5% white rice baht/mt
Year	6	7	8	9	10
1940	-	1210(K/J)	15474		
1941	-	1164	15766		
1942	-	749	16066		
1943	-	540	16369		
1944	-	310	16677		
1945	-	195	16993		
1946	-	455	17314		
1947	-	384	17925		
1948	-	803	18508		
1949	-	1205	19063		
1950	-	818	19635		
1951	-	1472	20224		
1952	-	1548	20831		
1953	-	1359	21456		
1954	-	997	22099		
1955	-	1219	22762		935(O)
1956	-	1239	23445		935
1957	-	1456	24148	884(P)	887
1958	-	1000	24873	1061	935
1959	-	1092	25619	869	935
1960	-	1202	27513(S)	885	890
1961	-	1576	28376	942	890
1962	-	1271	29263	1126	935
1963	-	1418	30174	979	950
1964	-	1896	31107	725	950
1965	-	1895	32062	860	950
1966	-	1508	33036	1158	950
1967	-	1483	34024	1144	1349
1968	-	1068	35028	972	1669
1969	-	1023	36050	860	1245
1970	-	1064	37091	629	958
1971	-	1576	38152(W)	800	750
1972	-	2113	39215	1311	750
1973	-	849	40281	1958	1533
1974	-	1029	41350	2232	3990
1975	-	951	42422	1978	800
1976	-	1973	43492	1870	700
1977	-	2946	44562	2368	
1978	-	1598	45626	2314	
1979	-	2796	46687	2647(BB)	
1980	-	3042	47740	3227	699(CC)
1981	-	3620	48787	3753	675
1982	-	3500			750

TABLE XXb (cont'd)

THAILAND	Wholesale rice price milled main market Bangkok baht/mt	Retail rice price milled main market Bangkok baht/mt	Domestic apparent per capita paddy availability kg/cap/yr
Year	11	12	14
1940	89		318
1941	131		325
1942	167		240
1943	182		338
1944	223		295
1945	426		210
1946	726		257
1947			307
1948	2916	1240(M)	369
1949	2520	1200	351
1950	2125	1200	345
1951	2083	1320	362
1952	2229	1600	317
1953	2041	1630	384
1954	1430(N)	1530	258
1955	1672	1570	322
1956	1638	1620	354
1957	1584	1590	231
1958	1818	2170(R)	284
1959	1617	1880	264
1960	1486	1840	285
1961	1633	2010	288
1962	1893	2320	317
1963	1682	2080	332
1964	1544	2050	307
1965	1536	2000	287
1966	2086	2620	409
1967	2398	2880	329
1968	2501	2250	357
1969	2525	2580	372
1970	1905	2540	366
1971	1578	1940	360
1972	1822	2180	301
1973	2865	3640	339
1974	3773	4083	318
1975	3723	4290	371
1976	3822	4508	380
1977	3866	4605	276
1978	4250	5189	347
1979	4522	5504	330
1980	5671	5809	359
1981	6500	7798	395
1982		7900(DD)	

TABLE XXb (cont'd)

THAILAND	Main rice crop area planted main season '000' ha	Main rice crop prod'n. main season paddy '000' mt	Main rice crop yield main season paddy mt/ha	Arable ha per person
Year	15	16	17	18
1960				.37
1961	6169(T)			
1962	6648			.34
1963	6589	10007(T)	1.52(T)	.35
1964	6527	9522	1.46	.36
1965	6535	9154	1.40	.36
1966	7458	13436	1.80	.39
1967	6626	11070	1.67	.39
1968	7036	12317	1.75	.38
1969	7522	12669	1.68	.37
1970	7407			.37
1971	7395			.40
1972	6989			
1973	7409			.45
1974	7651(X)	12447(X)	1.63(X)	
1975	8519	14092	1.65	
1976	8137	13674	1.68	
1977	8554	12335	1.44	.41
1978	9346	15206	1.63	.33
1979	9099	14646	1.61	

Notes to Appendix Tables XXa and XXb: Thailand

A/ 1901-1982: No rice imports made.

B/ 1902/03-1906/07: Area cultivated in rice annually as graded for tax purposes. Rice lands were classified according to a system of five grades based on average annual yields. The grades ran from Grade 1, with a yield of 7 piculs of paddy/rai (2.6 mt. paddy/ha.) to Grade 5, with 4.75 piculs of paddy/rai (1.79 mt. paddy/ha.). Cultivated rice area figures are smaller than planted area figures used from 1907/08 because allowances were made for damage from natural or other causes. Rice land taxes, estimated to be about one-tenth of gross production (Vella, 1957, p. 25), were paid in kind to the royal granaries.

C/ 1902/03-1939/40: Rice area, production, yields, and exports reported in crop years of April-March. Rice yields appear to be rather high in the pre-war period, especially in the earlier half, relative to post-war yields. This is probably due to the fact that taxes were determined on the basis of rice area. Thus, reported rice area figures are probably too low, helping to artificially raise yields. Another possible explanation, as Robert Kalston suggests is that less productive lands, including upland areas where rainfall was barely adequate, were brought under cultivation from about 1938 onwards. The output from these marginal lands was very low, decreasing yields. There is some credence to this suggestion, because Thailand has adopted modern technology very slowly, and still suffers from the results of low investment in infrastructure.

D/ 1902/03-1937/38: Irrigated area refers to total area irrigated under government schemes.

E/1903-1981: Rice exports include white rice, broken rice, glutinous rice, cargo rice, and other.

F/1903: As a corollary to the data recorded here, mention should be made of James Ingram's work, Economic Change in Thailand Since 1850. Ingram has made the most extensive review of pre-war data available. The study concentrates on trade and finance, but there are also sections on population and rice production. The rice export series are perhaps most pertinent to this table, with series for volume, value, and average price from 1857-1950.

On rice export statistics Ingram says, "Like all the statistics . . . , the figures for rice exports are of questionable accuracy. One useful rule to follow in considering any of the statistical material in this study, including rice exports, is never to place much weight on close year-to-year comparisons . . . . The rice export series is probably one of the most accurate . . . . Customs figures before 1920/21 included the trade of Bangkok only, but very little rice has been exported overland or through any other port. The Bangkok shipments probably accounted for 95-99 percent of the total rice exports" (Ingram, p. 40).

G/1907/08-1965: Ministry of Agriculture estimates used.

H/1907/08-1981: Since planted rice area is used rather than harvested rice area, yields are artificially depressed. Generally, approximately 4-10 percent of rice area planted is not harvested. Thus, yields for most years are about 7 percent larger than what is shown. However, for some years there are gross differences between planted and harvested areas, notably 1919, 1928, 1931, 1936, 1942, 1945, and 1977, when as much as 32 percent of

rice area planted was not harvested.

I/ 1914-1953: Average wholesale rice price is for No. 1, white rice, approximately 25 percent broken.

J/ 1914-1927: Farm wage rate is an average of January-March wage rates only.

K/ 1940-1974: Rice area, production, yields, and exports are reported in calendar years of January-December.

L/ 1942-1952: Irrigated area refers to total area irrigated under government and private schemes.

M/ 1948-1957: Main-market retail rice price is for 20 percent broken.

N/ 1954-1981: Average wholesale rice price is for 5 percent broken.

O/ 1955-1982: The rice premium was made official in 1955, although private exporters had been paying a duty to the Rice Office for several years prior to this date. Premium rate is for 5 percent white rice (except 1980/1981 = 100%) and is a weighted average of premium rates released throughout the year.

P/ 1957-1973: Farm-harvest price is in calendar years; 1974-1978 are in crop years of April-March.

Q/ 1958-1982: Refers to rice area irrigated under government and private schemes. Approximately 95 percent of total irrigated area is planted to rice.

R/ 1958-1982: Main-market retail rice price is for 5 percent broken (except 1974, which is for 10 percent broken).

S/ 1960-1981: Population is as of July 1 of the year in question. USDA

estimates are used because country estimates tend to consistently undercount the population.

T/ 1961-1973: Main rice crop area, yield, and production are calculated by subtracting off-season (dry) planted area and production from total planted area and production. These estimates are not strictly comparable with those published in Agricultural Statistics of Thailand. Thus, the large jump between 1973 and 1974 planted wet season areas is statistically induced. Unfortunately, the Agricultural Statistics series is not available prior to 1974.

U/ 1966-1974: Since 1966, the National Statistical Office (NSO) has produced rice area and production estimates independently of the Ministry of Agriculture. Although the series are similar for rice area, rice production estimates are widely divergent. NSO, using crop cutting, found that the Ministry of Agriculture was underreporting production by about 16 percent. For this reason, NSO estimates are used for the period 1966-1974. Thus, the large increase in production and yields in 1966 is statistically induced.

V/ 1971-1977: Arable area figures are estimates of farm-holding land, including housing area, paddy land, field-crop area, fruit tree, vegetable, and flower area, fallow land, grassland, and other. 1971 estimate is for the calendar year. 1973 and 1977 estimates are for crop years 1973/74 and 1977/78. In 1965, total farm-holding area was estimated at 12,595 thousand hectares (Thailand. Land Utilization of Thailand, 1965 [1968]). Ministry of Agriculture estimates are considerably larger than FAO estimates for the same years. For example, in 1977, FAO estimates that 17,650 thousand hectares were arable, almost 560 thousand hectares less than the Ministry estimate for the same year.

W/ 1971-1981: Population projections are based on an adjusted 1970 midyear population (36,825,000), and assumed trends in fertility and mortality are drawn from the 1974-76 "Survey of Population Change" (NSO, 1977); "The Survey of Fertility in Thailand," Institute of Population Studies, Chulalongkorn University and NSO, 1977; National Projection Series (NSO, 1976); an "Analysis of the Current Demographic Situation by the Committee on Population and Demography," National Academy of Science (1980); and "1978 Thailand Contraceptive Prevalence Survey" (NIDA, Ministry of Public Health and Westinghouse Health Systems, 1979).

X/ 1974/75-1979/80: Main rice crop area, production, and yields are in crop years (April-March) and refer to planted area. Estimates produced by the Ministry of Agriculture.

Y/ 1975/76-1981/82: Ministry of Agriculture and Cooperatives' estimates used (in crop years).

Z/ Brief mention should be made of agricultural regions in Thailand in conjunction with rice area and output statistics because the production of rice is regionally dispersed. Usually, Thailand is divided into Central, North, Northeast, and South regions. The Central region, a large well-watered plateau through which the Chao Phraya, Thailand's primary water system, meanders, is the most important rice-producing region. Yields are comparatively high, and most non-glutinous export rice is produced in this region. The North, bordering on Burma, is mountainous. Rice production, and agriculture in general, are practiced on a subsistence basis in river valleys, where population pressure is rather intense. The Northeast, or Khorat Plateau, borders Laos and Kampuchea. The climate tends to be more variable and output is quite unstable on a year-to-year basis. The South, a narrow peninsula binding Thailand to Malaysia proper,

is tropical in nature. Rice production is relatively unimportant in this region.

Rice Area Planted, Production, and Yield on a Regional Basis in Thailand, 1976-1978.

	1976/77	Percent of Total	1977/78*	Percent of Total	1978/79	Percent of Total
<u>KINGDOM</u>						
Area ('000' ha.)	8439	100	8399	100	9277	100
Production ('000' mt.)	16541	100	12290	100	15844	100
Yield (mt./ha.)	1.96		1.48		1.71	
<u>CENTRAL REGION</u>						
Area ('000' ha.)	1916	23	1928	23	2010	22
Production ('000' mt.)	4597	28	3652	30	4794	30
Yield (mt./ha.)	2.40		1.89		2.39	
<u>NORTHERN REGION</u>						
Area ('000' ha.)	2182	26	2118	25	2159	23
Production ('000' mt.)	4758	29	4067	33	4044	26
Yield (mt./ha.)	2.18		1.92		1.87	
<u>NORTHEASTERN REGION</u>						
Area ('000' ha.)	3668	43	3663	44	4426	48
Production ('000' mt.)	6027	36	3351	27	5807	37
Yield (mt./ha.)	1.64		.91		1.31	
<u>SOUTHERN REGION</u>						
Area ('000' ha.)	673	8	691	8	675	7
Production ('000' mt.)	1159	7	1220	10	1198	7
Yield (mt./ha.)	1.72		1.77		1.77	

\*1977/78 was an exceptionally poor year.

Source: NSO, Quarterly Bulletin of Statistics, Vol. 27, No. 2 (June, 1979).

aa/1978: Arable area figure is for land utilization, i.e., that land actually under cultivation, including rice, vegetable field crop area, tree crop area, and "non-cultivation" area. Data were published by NSO in the "1978 Agricultural Census Report, Thailand."

bb/1979/1981: Farm-harvest price is for paddy, special grade on a calendar-year basis. The 1981 farm price is an average of January-April only.

cc/1980-1982: Export premium is for 100 percent, Grade A white rice.

dd/1982: Retail rice price is an average of March-June prices only.

Sources of Data for Appendix Tables XXa and XXb: Thailand

1. Arable Area

1960-1966: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Far East (Bangkok: United Nations).

1967-1970: Food and Agriculture Organization of the United Nations, FAO Production Yearbook (Rome).

1971-1977/78: Thailand. Center for Agricultural Statistics, Krasuāng Kasēt (Ministry of Agriculture), Agricultural Statistics of Thailand (Bangkok).

1978: Thailand. National Statistical Office, Office of the Prime Minister, Statistical Yearbook of Thailand (Bangkok: 1980).

2. Rice Production

1907/08-1917/18: Association of Japanese Agricultural Scientific Societies, eds., Rice in Asia (Tokyo: University of Tokyo Press, 1975), p. 133; original source: Isrankura, Vanrob, A Study on Rice Production and Consumption in Thailand (Division of Agricultural Economics, Ministry of Agriculture, 1966).

1918/19-1980/81: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook Thailand) (Bangkok). Prior to 1937, see: Siam. Department of Commerce and Statistics, Ministry of Finance, Statistical Yearbook of the Kingdom of Siam (Bangkok: 1916-1936).

1981/82: Thailand. Ministry of Agriculture and Cooperatives (attaché report No. TH2025, March 2, 1982).

3. Rice Area

1902/03-1906/07: Siam. Department of Commerce and Statistics, Ministry of Finance, Statistical Yearbook of the Kingdom of Siam (Bangkok: 1923).

1907/08-1910/11: Association of Japanese Agricultural Scientific Societies, eds., Rice in Asia (Tokyo: University of Tokyo Press, 1975; original source: Isrankura, Vanrob, A Study on Rice Production and Consumption in Thailand (Division of Agricultural Economics, Ministry of Agriculture, 1966).

1911/12-1980/81: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook Thailand) (Bangkok). Prior to 1937, see: Siam. Department of Commerce and Statistics, Ministry of Finance, Statistical Yearbook of the Kingdom of Siam (Bangkok).

1981/82: Thailand. Ministry of Agriculture and Cooperatives (attaché report No. TH2025, March 2, 1982).

4. Rice Yields

1907/08-1981/82: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1902/03-1952: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook Thailand) (Bangkok). Prior to 1937, see: Siam. Department of Commerce and Statistics, Ministry of Finance, Statistical Yearbook of the Kingdom of Siam (Bangkok).

1958-1974: Thailand. Royal Irrigation Department, Ministry of Agriculture and Cooperatives, from Palacpac, Adelita, World Rice Statistics (Los

Banos, Philippines: International Rice Research Institute, 1980), Table 24.  
1976: Thailand. Royal Irrigation Department, Ministry of Agriculture and Cooperatives.  
1981/82: American Embassy, Bangkok, "Thailand: Agricultural Situation and Policy Report," March 1982.

6. Rice Imports

No imports made.

7. Rice Exports

1903-1979: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook of Thailand) (Bangkok). Prior to 1937, see: Siam. Department of Commerce and Statistics, Ministry of Finance, Statistical Yearbook of the Kingdom of Siam (Bangkok).

1980-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1901-1946: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook of Thailand) (Bangkok). Prior to 1937, see: Statistical Yearbook of the Kingdom of Siam.

1947-1959: Thailand. Center for Agricultural Statistics, Krasūang Kasēt (Ministry of Agriculture), Agricultural Statistics of Thailand (Bangkok).

1960-1970: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1950-1979 (Washington, D.C.: 1980).

1971-1981: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates of Countries With A Population of 10 Million or More: 1981 (Washington, D.C.: 1982).

9. Farm-Harvest Price
- 1957-1978: Thailand. Center for Agricultural Statistics, Krasūang Kasēt, (Ministry of Agriculture), Agricultural Statistics of Thailand (Bangkok).
- 1979-1981: Thailand. Agricultural Economics Research Division, Ministry of Agriculture and Cooperatives.
10. Rice Premium
- 1955-1972: Bank of Thailand. Manyanondh, Ruangrai, "Effect of Trade Taxes on Rice Farmers' Real Income," Master of Economics Thesis, Thammasat University, 1973, pp. 116-118.
- 1973-1976: The Rice Exporters Association, Production and Marketing Rice (June 1977), p. 73.
- 1980-1982. U.S. Agricultural Attaché Report No. 1145, December 4, 1981.
11. Wholesale Rice Price (Main Market)
- 1914-1953: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook of Thailand) (Bangkok). Prior to 1937, see: Statistical Yearbook of the Kingdom of Siam.
- 1954-1955: Pookkachatikul, Tongpan and Welsch, Delane, "Thai Rice Price Data" (Bangkok: Department of Agricultural Economics, Kasetsart University, 1974), Appendix Table No. 3.
- 1956-1977: Bank of Thailand. Bank of Thailand Statistical Bulletin (Bangkok).
- 1978-1981: Thailand. National Statistical Office. Office of the Prime Minister, Statistical Handbook of Thailand (Bangkok: 1981).
12. Retail Rice Price (Main Market)
- 1948-1953: Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook of Thailand) (Bangkok).
- 1954-1957: Bank of Thailand, Bank of Thailand Current Statistics (Bangkok).

1958-1973: Pookkachatikul, Tongpan and Welsch, Delane, "Thai Rice Price Data" (Bangkok: Department of Agricultural Economics, Kasetsart University, 1974).

1974-1982: Thailand. National Statistical Office, Quarterly Bulletin of Statistics (Bangkok).

13. Farm Wage Rate

1914-1927: Siam. Department of Commerce and Statistics, Ministry of Finance, Statistical Yearbook of the Kingdom of Siam (Bangkok).

14. Domestic Apparent Per Capita Rice Availability

1907-1981: Domestic availability is calculated by dividing paddy production (2) by population (8) on an annual basis.

15. Main Rice Crop Area

1961-1973: Mongkolsmai, Dow, "Status, Performance and Prospects for Irrigation in Thailand," Workshop on Rice Policies in Southeast Asia, IRRI, Los Banos, Philippines, May 21-25, 1979, p. 70.

1974-1978: Thailand. Center for Agricultural Statistics, Ministry of Agriculture, Agricultural Statistics of Thailand (Bangkok).

1979: Ministry of Agriculture, American Agricultural Attaché Report No. TH2025, March 2, 1982.

16. Main Rice Crop Production

1963-1969: Gaesuwan, Yuavores; Siamwalla, Ammar; and Welsch, Delane, "Thai Rice Production and Consumption Data 1947-1970," Thailand Rice Project Working Paper No. 2 (Bangkok: Department of Agricultural Economics, Kasetsart University, 1974), Appendix No. 6.

1974-1978: Thailand. Center for Agricultural Statistics, Ministry of Agriculture, Agricultural Statistics of Thailand (Bangkok).

1979: Ministry of Agriculture. American Agricultural Attaché Report  
No. TH2025, March 2, 1982.

17. Main Rice Crop Yield

1963-1979: Main rice crop yield is calculated by dividing main rice  
production (16) by area (15) on an annual basis.

Country Sources of Basic Data: Thailand\*

1. Thailand. National Statistical Office, Samut sathiti rāi pī khōng prathet Thai (Statistical Yearbook of Thailand) (Bangkok: 1916- ). (Formerly Siam Statistical Yearbook.)
2. Thailand. National Statistical Office, Quarterly Bulletin of Statistics (Bangkok: 1952- ).
3. Thailand. Center for Agricultural Statistics, Krasūang Kasēt (Ministry of Agriculture), Agricultural Statistics of Thailand (Bangkok: 1954- ).
4. Thailand. Krom Kān Khāo (Department of Rice ), Krasūang Kasēt (Ministry of Agriculture), Rāingān sarup phon kāntham nā (Annual Report of Rice Production in Thailand) (Bangkok); in Thai.
5. Thanā Khān Haēng Prathēt Thai (Bank of Thailand), Bank of Thailand Monthly Bulletin (Bangkok: 1953- ). Formerly Bank of Thailand Current Statistics.
6. Thailand. Department of Customs, Foreign Statistics of Thailand (Bangkok: 1954- ).

\* Most statistical sources are in both Thai and English. To facilitate easy access to primary statistical sources, Thai romanization for ministries and journal titles has been supplied when the main entry is in Thai.

7. Thailand. National Statistical Office, Office of the Prime Minister, Statistical Handbook of Thailand (Bangkok: 1975- ).

Useful Secondary Sources

1. Gaesuwan, Yuavores; Siamwalla, Ammar; and Welsch, Delane, "Thai Rice Production and Consumption Data 1947-1970," Thailand Rice Project Working Paper No. 2 (Bangkok: Department of Agricultural Economics, Kasetsart University, 1974).
2. Pookkachatikul, J.; Tongpan, S.; and Welsch, D., "Thai Rice Price Data," Staff Paper No. 14 (Bangkok: Department of Agricultural Economics, Kasetsart University, 1974).
3. Somboonsup, Sri-on, "The Pattern of Thai Rice Exports, 1955-1972," M.S. thesis, Graduate School of Kasetsart University, 1975.
4. World Bank, Thailand Toward a Development Strategy of Full Participation (Washington, D.C.: East Asia and Pacific Regional Office, World Bank, 1980).
5. Ingram, James C., Economic Change in Thailand, 1850-1970 (Stanford: Stanford University Press, 1971).
6. Silcock, T. H., The Economic Development of Thai Agriculture (Ithaca, N.Y.: Cornell University Press, 1970).
7. Siamwalla, Ammar, "A History of Rice Policies in Thailand," Stanford University, Calif., Food Research Institute Studies, Vol. 14, No. 3, 1975, pp. 233-249.
8. Mongkolsmai, Dow, "Status, Performance and Prospects for Irrigation in Thailand," Workshop on Rice Policies in Southeast Asia at the International Rice Research Institute, Los Banos, Philippines, May 21-25, 1979.
9. Girling, John L. S., Thailand Society and Politics (Ithaca, N.Y.: Cornell University Press, 1981).

10. Donner, Wolf, The Five Faces of Thailand, An Economic Geography (New York: St. Martin's Press, 1978).
11. Ishii, Yoneo, ed., Thailand: A Rice Growing Society (Honolulu: The University Press of Hawaii, 1978), translated by Peter and Stephanie Hawkes.
12. Motooka, Takeshi, "Agricultural Development in Thailand," I, II, III, IV, Discussion Paper No. 26, 27, 28, 29, Center for Southeast Asian Studies (Kyoto: Kyoto University, 1971).

#### Important Conversion Factors

In 1923, the government adopted metric units as the standard. Local terms were not eliminated, but standardized by rounding to the nearest metric unit.

Pre-1923 picul = 60.48 kg.

metric picul = 60 kg.

1 catty = 600 grams (6 kg.)

1 kwien = 2,000 liters

1 ban = 1,000 liters

1 sat = 20 liters

1 thanan = 1 liter

1 rai = 0.16 ha.

1 kwien paddy = 1 mt.

#### Money Unit

money unit - baht - formerly referred to as the tical in the West.

1 baht = 100 santang

In 1980, 1 US\$ = 20.63 baht official exchange rate

In 1980, 1 US\$ = 19.97 baht free-market exchange rate

Thailand was known as Siam in the West until Phibun came to power in 1939.

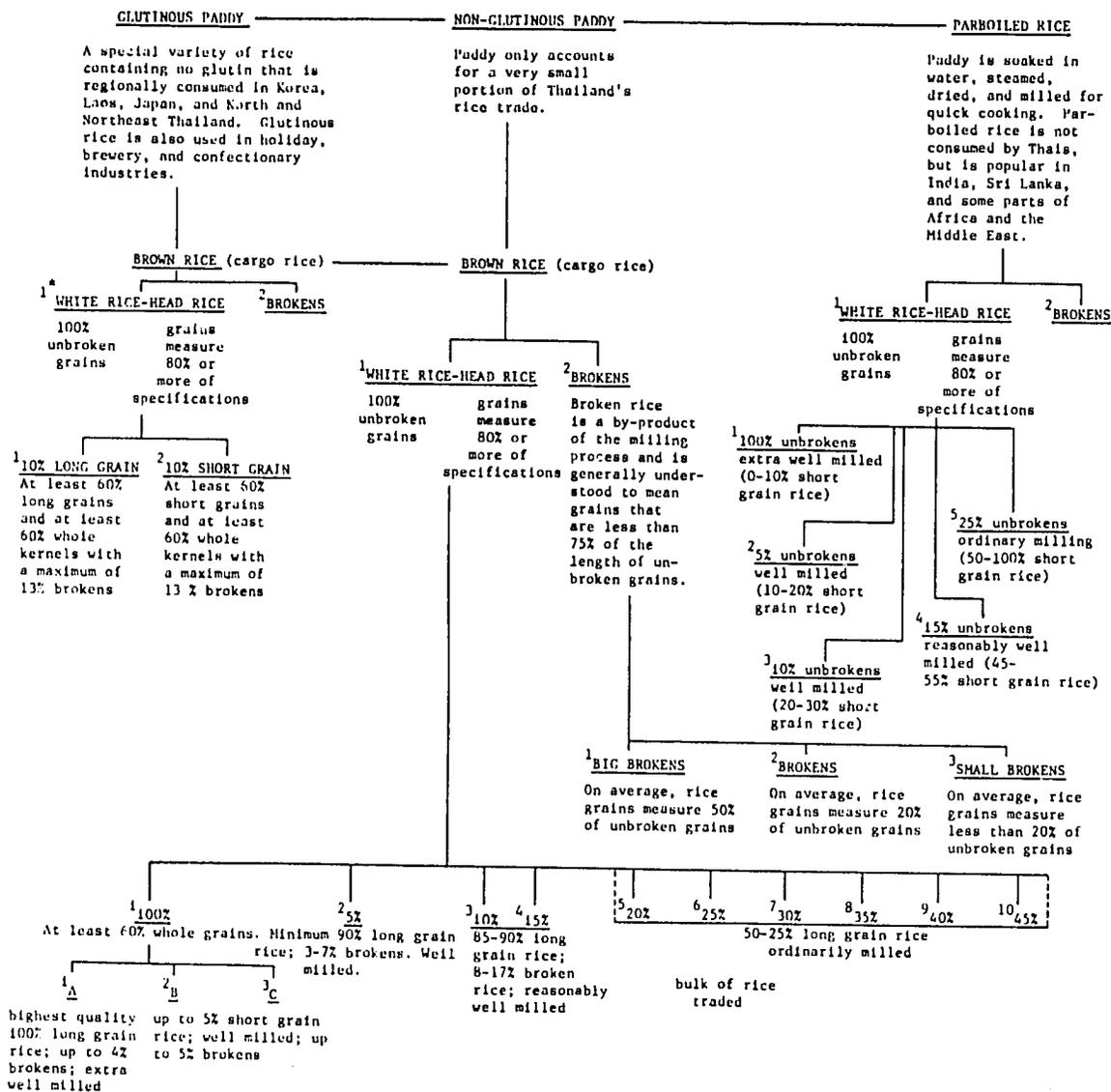
Phibun changed the official name of the country to Thailand. Thailand briefly became Siam again after Pribun's ouster at the end of World War II, but became Thailand again when he returned to power in 1947. Prior to 1940, the Thai calendar year began April 1 and ended March 31. This coincided with the Thai rice harvest. A calendar year, January-December, was used post-1940. The Thais also frequently count years according to Buddhist time. To change from Western years to Thai years, add 543, e.g., Thai 2026 = 1983.

### Rice Grades in Thailand

Thailand first officially began exporting rice in 1851 in response to Western demands for free trade. Because of fertile soils, ample water supplies, and a favorable climate, Thailand has been able to produce large rice surpluses on a regular basis without significant investment in infrastructure. Burgeoning rice exports once were a significant source of income for the government, and Thailand still accounts for approximately 25 percent of total world rice trade each year. However, Thailand has diversified production into other more lucrative areas such as corn, sorghum, sugar, pineapples, and cassava. In 1979, the value of cassava exports exceeded that of rice. Thailand's primary customers are Indonesia, Singapore, Hong Kong, Malaysia, Saudi Arabia, U.S.S.R., Nigeria, Iraq, Iran, and the Ivory Coast.

As a result of the importance of rice in Thailand's export economy and the varied requests of customers, the Thais have developed a very complex system for grading rice. First, rice is classified at the mill by the degree of milling and by the average size of the grains within the type. At a later stage, rice within each type is further subdivided by the percent brokens and according to the length of the rice grains. The fine tunings of the grading system allow Thailand to meet the wide spectrum of specifications demanded by the international market. The following simplified table should help clarify the rice grading system in graphic form.

SIMPLIFIED CHART OF RICE GRADING IN THAILAND



\* Smaller numbers indicate highest quality; larger number indicate poorest quality. Long grain rice commands a premium over short grain rice. The higher the percent of broken grains, the lower the quality.

XXI: BURMA\*

Rice Statistics in Burma

In the pre-war period, Burma, under British colonial tutelage, developed an extensive system by world standards for the collection of agricultural statistics. A wide range of data is available in statistical publications for the 1900-1930s period for Burma Proper (Upper and Lower Burma), which was directly administered by the British. Conversely, statistical coverage for the surrounding hill states of Burma does not appear to have been complete, but this had only a negligible long-term effect on rice series because little rice was produced in these areas. The post-World War II governments appear to have made few changes in colonial collecting and reporting procedures, which are similar to those used in India. However, little statistical material is available in the West for the post-war period. Burma is one of the few cases where pre-war statistics are more plentiful than post-war statistics.

During colonial times, Burma was loosely divided into Upper and Lower halves, which were subdivided into districts. Lower Burma, a malarial swamp land that later became Burma's primary source for surplus export rice, included Irrawaddy, Pegu, Arakan, and Tenasserim Districts. Upper Burma, which has a dry climate less suitable for wet-land rice production, included Mandalay, Magwe, and Sagaing Districts. These areas were collectively referred to as Divisional Burma or Burma Proper. In the post-war period, statistical coverage expanded to include the hill states, which were gradually added to Burmese territory. These changes included the addition of a special division, the

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\*Thanks to John Ambler for comments.

Arakan Hill tracts, now called Chin Hills, in 1947/48; the addition of the Kachin State in the early 1950s; and the addition of Kawathoolie (Karen State) in the mid-1950s.

Burma's statistical system, like that in most other Asian countries, is organized around a central bureau, the Central Statistical Organization (CSO), which oversees statistical collection in general, as well as managing periodic population censuses. Ministries are individually responsible for data pertaining to their area of specialty. The Ministry of Agriculture and Forests (MAF) collects and issues rice statistics through its constituent departments. Four departments carry out data collection and analysis and make agricultural planning decisions based on statistical information. These are the Planning and Statistics Department, the Irrigation Department, the Agricultural Corporation, and the Land Record and Settlement Department.

The Land Record and Settlement Department (LRSD) carries out most data collection for rice statistics at the village and proceeding upward to the national level. Data are compiled and publicly issued in Agricultural Statistics and/or Season and Crop Report (both currently unavailable in the U.S.). This system is basically identical to that used prior to World War II. In the pre-war period, the Land Record and Settlement Department collected data and issued them through the annual journal, Season and Crop Report. Data were collected by district assessment officers from the LRSD. The officers used land records based on colonial cadastral surveys to obtain rice area. Yields were calculated by making a visual estimation of the current condition of the crop and comparing this to expected normal yields determined by settlement records. Today, crop cutting is frequently used to determine yields or to check eye estimations. Presently, LRSD initiates data collection at the village

level by sending a surveyor clerk to carry out initial crop cuttings with the assistance of a village manager from the Agricultural Corporation and two local farmers from the village. This process is very important to both the government and farmers because paddy procurement responsibilities are partially fixed based on expected output.\*

Area is reported in acres, production in long tons of paddy. Paddy yields are still reported using the traditional volume measure, the basket, which has been set equal to 46 lbs. of paddy. Burmese agricultural statistics are usually reported on a crop-year basis (July 1-June 30).

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\* Paddy is directly procured from individual farmers or through cooperatives by representatives of the Agricultural and Farm Produce Trade Corporation, an arm of the Ministry of Trade. The procurement price for paddy is fixed by paddy variety for Burma as a whole and frequently remains unchanged for long periods of time in spite of internal and external free-market fluctuations. Paddy is procured at a varying rate depending on local weather conditions, the size of the farm and its average yield, and the fixed needs of the government each year for exports, storage, and distribution. (Procurement rates behave like graduated taxes. Farmers with larger farms and better yields must turn over a higher portion of their paddy crop. Rates range from 7 percent to more than 60 percent of total output.)

TABLE XXIa

BURMA.	Net cropped area (A) '000' ha	Rice prod'n. (A) paddy '000' mt.	Rice area harvested (A) '000' ha	Rice yield (A) paddy mt/ha
Year	1	2	3	4
1900	4628		3463	
1901	4738		3344	
1902	4599		3360	
1903	4845		3514	
1904	5085		3753	
1905	5022		3759	
1906	5089		3730	
1907	5161		3779	
1908	5479		3938	
1909	5562	7022	4052	1.73
1910	5341	6501	4030	1.61
1911	5353	6584	3979	1.65
1912	5612	7065	4139	1.71
1913	5730	6444	4184	1.54
1914	5766	5665	4261	1.33
1915	5707	6764	4214	1.61
1916	5838	7079	4281	1.65
1917	5941	7260	4336	1.67
1918	5901	6015	4205	1.43
1919	6019	5487	4244	1.29
1920	6004	6116	4187	1.46
1921	6206	7117	4334	1.64
1922	6319	6344	4441	1.43
1923	6294	5769	4552	1.27
1924	6471	7486	4631	1.62
1925	6563	6828	4681	1.46
1926	6678	7541	4778	1.58
1927	6609	7009	4739	1.48
1928	6670	7123	4883	1.46
1929	6766	7279	4945	1.47
1930	6867	7492	5010	1.50
1931	6643	6098	4805	1.27
1932	6860	7172	4880	1.47
1933	6954	7546	4958	1.52
1934	6924	6576	4864	1.35
1935	6943	7307	4809	1.52
1936	7020	6877	4930	1.39
1937	7159	6730	5056	1.33
1938	7042	7925	5014	1.58
1939	7041	6879	5035	1.37

TABLE XXIa (cont'd)

BURMA	Rice area irrig. (A)	Rice imports milled (B)	Rice exports milled (B)	Farm-harvest price paddy
Year	'000' ha	'000' mt	'000' mt	Kyat/mt
	5	6	7	9
1900		-	2093	
1901	258	-	2314	37
1902	248	-	2280	46
1903	257	-	1750	43
1904	314	-	2190	42
1905	310	-	2028	46
1906	287	-	2201	48
1907	338	-	2384	58
1908	395	-	2160	49
1909	424	-	2398	45
1910	368	-	2376	50
1911	379	-	2188	64
1912	432	-	2351	58
1913	424	-	2696	54
1914	448	-	2282	42
1915	456	-	1643	50
1916	503	-	1715	49
1917	480	-	1978	39
1918	470	-	2993	52
1919	483	-	2354	79
1920	452	-	2104	69
1921	511	-	2295	83
1922	542	-	2605	76
1923	566	-	2347	80
1924	567	-	2476	76
1925	556	-	3143	80
1926	572	-	2528	84
1927	567	-	3007	78
1928	591	-	2842	73
1929	573	-	2970	63
1930	578	-	2831	39
1931	546	-	3202	43
1932	555	-	2579	32
1933	590	-	3194	25
1934	554	-	3421	46
1935	553	-	2942	41
1936	575	-	2861	44
1937	589	-	2863	38
1938	575	-	3037	36
1939	594	-	3131	47

TABLE XXIa (cont'd)

BURMA	Wholesale rice price (B) paddy Kyat/mt	Retail rice price milled average Kyat/mt	Main rice area harvested (A) Kaukkyi '000' ha
Year	11	12	15
1900	46(D)	84(E)	
1901	45	82	
1902	43	80	3125
1903	55	98	3340
1904	46	87	3575
1905	51	93	3589
1906	60	99	3589
1907	65	104	3612
1908	67	116	3770
1909	53	102	3918
1910	53	95	3910
1911	69	112	3853
1912	80	140	4035
1913	62	112	4078
1914	58	100	4161
1915	61	101	4113
1916	56	98	4173
1917	48	88	4226
1918	55	88	4106
1919	64	129	4158
1920	91	164	4099
1921	99		4235
1922	95		4336
1923	82		4452
1924	98		4527
1925	91		4576
1926	97		4667
1927	90		4631
1928	81		4778
1929	81		4829
1930	64		4888
1931	38		4693
1932	44		4761
1933	31		4845
1934	34		4753
1935	45		4701
1936	44		4811
1937	47		4934
1938	43		4885
1939	46		4907

TABLE XXIb

BURMA	Net sown area (A) '000' ha	Rice prod'n. (A) paddy '000' mt	Rice area planted (A) '000' ha	Rice yield (A) paddy mt/ha	Rice area irrig. (A) '000' ha
Year	1	2	3	4	5
1940	7112	8037	5070	1.59	609
1941					
1942					
1943					
1944					
1945	4440	2672	2690	0.99	434
1946	4996	3836	3204	1.20	446
1947	5673	5429	3752	1.45	510
1948	5879	5153	3968	1.30	521
1949	5597	4571	3652	1.25	478
1950	5789	5387	3706	1.45	490
1951	5644	5564	3831	1.45	503
1952	5993	6012	4019	1.50	518
1953	6126	5662	4104	1.38	514
1954	6022	5635	3978	1.42	461
1955	6128	5694	4054	1.40	487
1956	6128(L)	6275(M)	4080	1.54	508
1957	6056	5308	3989	1.33	482
1958	6268	6579	4091	1.61	454
1959	6412	6864	4203	1.63	465
1960	6468	6639	4220	1.57	469
1961	7168(P)	6486(Q)	4683(R)	1.39	473
1962	7710	7665(S)	4841	1.58	500
1963	7974	7790	5052	1.54	663
1964	7942	8507	5112	1.66	684
1965	7879	8056	5018	1.61	634
1966	7801	6635	4997	1.33	663
1967	7701	7768	4938	1.57	691
1968	7738	8022	5023	1.60	742
1969	7710	7985	4958	1.61	722
1970	7830	8162	4979	1.64	736
1971	7891	8175	4982	1.64	753
1972	7808	7356	4866	1.51	733
1973	7974	8601	5093	1.69	827
1974	8002	8583	5181	1.66	873
1975	8027	9207	5207	1.77	876
1976	7915	9319	5082	1.83	852(x)
1977	7996	9462	5099	1.86	
1978	8102	10528	5248	2.01	
1979	7911	10448	5030	2.08	
1980	8165	13317	5131	2.60	
1981	8304(z)	14146(z)	5107(z)	2.78(z)	

TABLE XXIb (cont'd)

BURMA	Rice imports (B) milled '000' mt	Rice exports (B) milled '000' mt	Population midyear '000' persons	Farm-harvest price paddy Kyat/mt
Year	6	7	8	9
1940	-	2851		53
1941	-		16824	
1942	-			
1943	-			
1944	-			
1945	-	428		107
1946	-	868		127
1947	-	1271		140
1948	-	1213		135
1949	-	1097		130
1950	-	1389	18766(H)	143
1951	-	1170	19051	147
1952	-	1220	19376	
1953	-	1288	19707	141
1954	-	1657	20044	149
1955	-	1961	20387	149
1956	-	2037	20734	144
1957	-	1486	21128	152
1958	-	1637	21529	152(0)
1959	-	2113	21938	157
1960	-	1617	22355	159
1961	-	1936	22780	167
1962	-	1717	23187	164
1963	-	1589	23697	167
1964	-	1425	24218	171
1965	-	1197	24751	171
1966	-	717	25303	191
1967	-	404	25867	
1968	-	406	26444	
1969	-	739	27034	
1970	-	861	27637	
1971	-	789	28262	
1972	-	314	28886	
1973	-	106	29521	
1974	-	231	29846	
1975	-	495	30502	
1976	-	547	31173	
1977	-	609	31859	
1978	-	161	32573	
1979	-	736	33313	
1980	-	631	34083	
1981	-	884	34882	

TABLE XXIb (cont'd)

BURMA	Procurement price paddy Kyat/mt	Wholesale rice price (C) paddy average Kyat/mt	Retail rice price (B) milled average Kyat/mt	Farm wage rate Kyat/day
Year	10	11	12	13
1940		61		
1941		68		
1942				
1943				
1944				
1945				
1946		215(F)		
1947		300		
1948		263		
1949	137(G)	280		
1950	137	162(I)		
1951	137	171		
1952	137	164	338(J/K)	
1953	137	155	352	
1954	137	164	338	
1955	137	166	357	
1956	137	162	380	
1957	137	167	347	4.31(N)
1958	137	171	333	3.95
1959	137	179	357	3.83
1960	137	171	376	4.61
1961	144	145	380	5.66
1962	148	186	394	6.07
1963	148	179	385(T)	7.03
1964	148	161	371(U)	7.11
1965	148	158		7.11
1966	163	187	352(V)	8.16
1967	171	469	1746	8.45
1968	171	623	648	6.82
1969	171	341	305	7.03
1970	171	334	305	7.27
1971	171	439	432	7.62
1972	204	545	671	7.67
1973	287	755	1254	6.27
1974	431	910	1254(W)	7.24
1975	431	828	1174	7.57
1976	431	797	1174	7.37
1977	431		1174(Y)	
1978	431			
1979	431			
1980	431			
1981	431			

TABLE XXIb (cont'd)

BURMA	Domestic apparent per capita paddy availability kg/cap/yr	Main rice area harvested (A) Kaukkyi '000' ha	Net cropped ha/person
Year	14	15	18
1945		2601	
1946		3089	
1947		3626	
1948		3847	
1949		3550	
1950	287	3631	.31
1951	292	3757	.30
1952	310		.31
1953	287		.31
1954	281		.30
1955	279		.30
1956	303	3953	.29
1957	251	3856	.29
1958	306		.29
1959	313		.29
1960	297		.29
1961	285		.31
1962	331		.33
1963	329		.34
1964	351		.33
1965	325		.32
1966	262		.31
1967	300		.30
1968	303		.29
1969	295		.28
1970	295		.28
1971	289		.28
1972	255		.27
1973	291		.27
1974	288		.27
1975	302		.26
1976	299		.25
1977	297		.25
1978	323		.25
1979	314		.27
1980	391		.24
1981	406		.24

Notes to Appendix Tables XX1a and XX1b: Burma

A/ In Burmese agricultural years, July 1-June 30.

B/ In Burmese fiscal years, April 1-March 31, 1900/01-1940/41; October 1-September 30, 1945/46-1973/74; and April 1-March 31, 1974/75-present.

C/ In calendar years.

D/ 1900-1941: Wholesale price is for Ngasein paddy and is a main-market (Rangoon) price.

E/ 1900-1920: Average retail rice price is for common rice.

F/ 1946-1949: Wholesale price is for Ngasein Second Bazaar Quality rice.

G/ 1949-1981: Government procurement price is the price for ordinary Ngasein paddy. Other varieties are also procured at differing prices depending on the quality.

H/ 1950-1981: Population is on a fiscal year basis (including 1941). The old fiscal year is used 1950-1973. The new fiscal year, October-September, is used 1974-1981.

I/ 1950-1976: Wholesale paddy price is for Ngasein paddy (in calendar years).

J/ 1952-1964: Retail rice price is for local best rice and is an average of nine markets.

K/ 1952: Average retail rice price is an average of two quarters only.

L/ 1956-1957: Net cropped area excludes Putao, Chin Hills, and Shan and Kayah States.

M/ 1956-1980: Chin State is included in the production of rice. Chin paddy production is fairly small, averaging 27,000 metric tons.

N/ 1957-1976: Farm wage rate is for males on rubber plantations. Data were collected by FAO and ILO.

O/ 1958-1956: The farm-harvest price is an average of Ngasein, Meedone, Emata, and Ngakyuwe rices.

P/ 1961-1980: Figures refer to net area sown for Burma, including area cultivated within reserved forests and grazing grounds. In 1961, some areas did not submit reports.

Q/ 1961-1980: Shan State is included in the production of rice. Shan paddy production is quite significant, averaging 390,000 metric tons.

R/ 1961-1980: Shan and Kayah States included in rice area, accounting for about 324,000 hectares of sown paddy land.

S/ 1962-1980: Kayah State is included in the production of rice. Kayah paddy production is quite small, averaging 20,000 metric tons.

T/ 1963: Average retail rice price is an average of January-June only.

U/ 1964: Average retail price is the average of January-June only.

V/ 1966-1973: Retail rice price is a main-market (Rangoon) price for average Ngasein rice. 1966, 1969, and 1970 are controlled prices.

W/ 1974-1977: Main-market retail rice price is the prevailing free-market price for Ngasein rice in November of the year in question. The fixed cooperative selling price is considerably lower.

X/ 1976/1977: Figures are provisional and subject to revision.

Y/ 1977: Main-market retail rice price is for January and is provisional.

Z/ 1981/82: Net sown area, and rice area, production, and yield figures are provisional and subject to revision.

Sources of Data for Appendix Tables XXIa and XXIb: Burma

1. Net Cropped Area

1900/01-1957/58: Burma. Department of Land Records and Agriculture, Season and Crop Report of the Union of Burma (Rangoon).

1959/60-1981/82: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (various issues).

2. Rice Production

1909/10-1949/50: Burma. Department of Land Records and Agriculture, Season and Crop Report of the Union of Burma (Rangoon).

1950/51-1973/74: Soe, Myint, "Economics of Production and Procurement of Paddy in Burma," M.S. thesis, University of the Philippines, 1978; original source: Planning and Statistics Department.

1974/75-1981/82: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (various issues).

3. Rice Area

1900/01-1949/50: Burma. Department of Land Records and Agriculture, Season and Crop Report of the Union of Burma (Rangoon).

1950/51-1974/75: Soe, Myint, "Economics of Production and Procurement of Paddy in Burma," M.S. thesis, University of the Philippines, 1978;

original source: Planning and Statistics Department.

1975/76-1981/82: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (various issues).

4. Rice Yield

1909/10-1981/82: Rice yields are calculated by dividing rice production (2) by rice area (3).

5. Rice Area Irrigated

1900/01-1949/50: Burma. Department of Land Records and Agriculture, Season and Crop Report of the Union of Burma (Rangoon).

1950/51-1972/73: Soe, Myint, "Economics of Production and Procurement of Paddy in Burma," M.S. thesis, University of the Philippines, 1978; original source: Settlement and Land Records Department, Ministry of Agriculture and Forests.

1973/74-1976/77: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (various issues).

6. Rice Imports

No rice imports made.

7. Rice Exports

1900/01-1928/29: Grant, J. W., The Rice Crop in Burma: Its History, Cultivation, Marketing and Improvement, Agricultural Survey No. 17 of 1932 (1956 reprint) (Agricultural Department, 1932).

1929/30-1934/35: Economic Research Project, Economic Paper No. 5 (Rangoon: Department of Economics, Statistics and Commerce, University

of Rangoon, 1959).

1935/36-1946/47: Burma (Union). Office of the Collector of Customs, Annual Statement of the Seaborne Trade and Navigation of Burma (Rangoon: Sup't., Government Prints and Stationery).

1947/48-1949/50: Burma (Union). Central Statistical and Economic Department, Quarterly Bulletin of Statistics (Rangoon).

1950/51-1975/76: Soe, Myint, "Economics of Production and Procurement of Paddy in Burma," M.S. thesis, University of the Philippines, 1978; original source: Agricultural Statistics Department.

1976/77-1981/82: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (various issues).

#### 8. Population

1941/42-1961/62: Burma. Central Statistical and Economics Department, Statistical Yearbook of Burma (Rangoon: 1961).

1962/63-1981/82: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (1982/83 volume).

#### 9. Farm-Harvest Price

1901-1957: Burma. Department of Land Records and Agriculture, Season and Crop Report of the Union of Burma (Rangoon).

1958-1966: Burma. Central Statistical and Economics Department, Statistical Yearbook of Burma (Rangoon: 1961, 1963, 1967).

#### 10. Procurement Price

1949/50-1961/62: Richter, H. V., "Burma's Rice Surpluses: Accounting for the Decline," Working Paper No. 3, Development Studies Centre, The

Australian National University.

1962/63-1981/82: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (various issues).

11. Average Wholesale Paddy Price

1900-1949: Burma (Union). Central Statistics and Economics Department, Quarterly Bulletin of Statistics (Rangoon).

1950-1976: Soe, Myint, "Economics of Production and Procurement of Paddy in Burma," M.S. thesis, University of the Philippines, 1978; original source: Central Statistical Organization.

12. Average Retail Rice Price

1900-1920: India. Department of Statistics, Prices and Wages in India (Calcutta: Sup't, Government Printing, 1922).

1952/53-1964/65: Burma (Union). Central Statistical and Economics Department, Quarterly Bulletin of Statistics (Rangoon).

1966/67-1973/74: Burma. Central Statistical and Economics Department, Statistical Yearbook of Burma (Rangoon: 1975).

1974/75-1977/78: Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma for 1977-1978 (1977).

13. Farm Wage Rate

1957-1976: Palacpac. Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, 1981).

14. Domestic Apparent Per Capita Rice Availability

1950-1981: Domestic apparent per capita rice availability is calculated by dividing paddy production (2) by population (8) on an annual basis.

15. Main Paddy Crop Area - Kaukkyi

1902/03-1957/58: Burma. Department of Land Records and Agriculture,  
Season and Crop Report of the Union of Burma (Rangoon).

Country Sources of Basic Data: Burma<sup>\*</sup>

1. Burma. Department of Land Records and Agriculture, Season and Crop Report of the Union of Burma (Rangoon).
2. Burma. Office of the Collector of Customs, Annual Statement of the Seaborne Trade and Navigation of Burma (Rangoon: Sup't, Government Prints and Stationery).
3. Burma. Central Statistical and Economics Department, Quarterly Bulletin of Statistics (Rangoon).
4. Burma. Central Statistical and Economics Department, Statistical Yearbook of Burma (Rangoon).
5. Burma. Ministry of Planning and Finance, Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (Beginning 1974/75).

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<sup>\*</sup> Available in the U.S.

Useful Secondary Sources

1. Cheng, Siok-hwa, The Rice Industry of Burma 1852-1940 (Kuala Lumpur: University of Malaya Press, 1968).
2. Government of Burma, Notes on Agriculture in Burma (Rangoon: Sup't., Union Government Printing and Stationery, 1955).
3. Henderson, John et al., Area Handbook of Burma (Washington, D.C.: Foreign

Area Studies, American University, 1971).

4. Richter, H. V., Burma's Rice Surpluses: Accounting for the Decline, Working Paper No. 3 (Canberra: Development Studies Centre, Australian University Press, 1976).
5. Soe, Myint, "Economics of Production and Procurement of Paddy in Burma," M.S. thesis, University of the Philippines, June 1978.
6. Steinberg, D. I., Burma's Road to Development: Growth and Ideology (Boulder: Westview Press, 1981).

Important Conversion Factors

100 measures paddy = 1 basket<sup>\*</sup> paddy = 9 gallons paddy  
1 basket<sup>\*</sup> paddy = 46 lbs. paddy = 20.86 kg. paddy  
1 basket<sup>\*</sup> milled rice = 75 lbs. rice = 34.02 kg. milled rice  
100 baskets paddy = 2086 kg. rice  
1 mt. paddy = 47.927 baskets paddy  
1 bag milled rice = 225 lbs. rice = 102.06 kg. rice  
1 bag milled rice = 3 baskets milled rice  
1 mt. milled rice = 9.798 bags rice

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\* Since World War II, English weight measures (pound, long ton) have usually been used in the Burmese rice economy (except for rice yields), but prior to World War II, a volume measure, the basket, was in widespread use. Plaited bamboo baskets were used to buy, sell, and trade paddy or rice. The volume capacity of the standard basket of paddy was supposed to be nine gallons or 46 pounds, but varied between 44 and 54 pounds depending on the basket. The standard basket

1 pyi milled rice = 4.69 lbs. rice = 2.13 kg. rice

1 basket milled rice = 16 pyi rice = 1.125 bushels rice

1 mt. milled rice = 469.484 pyi rice

1 maund = 0.037 mt.

1 viss = 100 ticals = 3.60 lbs. = 1.63 kg.

1 mt. = 26.792 maunds

#### Rice Milling Rates \*

Pre-war: 60-65 percent

1946-1959: 63.1 percent

1960-1972 62.5 percent

#### Glossary of Paddy Varieties

Kaukkyi - Winter or late rices, with a long growing period of 170-200 days.

Kaukkyi is the most important paddy variety, accounting for over 80 percent of Burma's rice area and is grown in low-lying rainfed or irrigated paddy fields.

Kauklat - Autumn rices with a medium growing period of 150-170 days. These varieties were widely grown in the rainfed soils of Upper Burma.

Kaukyin - Early rices with a 140-150 day maturation period. These varieties are highly drought resistant, but productivity is low. They are relatively unimportant, but grown in some areas with marginal rice growing conditions, chiefly Upper Burma.

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capacity was fixed by empty milkmaid brand condensed milk cans, called nozibu.

Each condensed milk can held 14 oz., and each standard basket held 128 nozibu.

\* Milling rates have continued to decline in the post-war period because of the use of antiquated and failing milling machinery.

Mayin - Relatively unimportant spring rices, with a 140-150 day growing season.

### Money Unit

Pre-war: 1 rupee = 16 anna; 1 anna = 0.625 rupees

1953 on: rupee renamed kyat. 1 kyat = 100 pyas

In 1980 1 US\$ = 6.76 kyat official exchange rate

In 1980 1 US\$ = 47.33 kyat free-market exchange rate

### Rice and Paddy Classification

Paddy is roughly classified into five main types according to the physical characteristics, primarily length and width, of the grain. These are: Emata, Letywezin, Ngasein, Meedone, and Byat. Emata and Letywezin rices are long and thin. They were grown primarily for the quality export market. Ngasein, Meedone, and Byat rices are short and wide. Ngasein is the major export rice of Burma, while Meedone rices are popular for home consumption because of their taste and texture.

In the pre-war period, after paddy was milled and ready to be marketed, it was regraded according to the original quality of the paddy, the percent brokens, and the degree of milling. The extensive Burmese rice grading system was developed in response to the burgeoning export market directed towards Europe and later to the rest of Asia. The highest grades, the Europes, used Ngasein paddy and ranged from 5 percent to 27 percent brokens. Small Mills Specials and Big Mills Specials were the poorest grades milled from inferior grades of paddy, with 42-45 percent brokens. These rices were directed towards the low quality Asian export market. Straits Quality and Bazaar Quality were intermediate rices ranging from 35-38 percent brokens. Bazaar Quality, milled chiefly from Meedone paddy, was the most popular rice for home consumption. Sugandhi rices, milled from Emata paddy, were destined for export on the specialty market to India. In addition to the above, parboiled rice and broken rice were also graded by quality.

SOUTH ASIA

XXII.	Bangladesh	322
XXIII.	India	336
XXIV.	Nepal	359
XXV.	Pakistan	370
XXVI.	Sri Lanka	383

## XXII: BANGLADESH

### Rice Statistics in Bangladesh

All of the bodies involved in the collection of agricultural statistics in Bangladesh depend on statistical collection at the local level for raw rice acreage and yield data. Data is collected at the union level (or group of villages) by the Union Agricultural Assistant using two primary methods. Subjective evaluation relies on "eye estimation." Estimates are prepared based on farmers' opinions and the observations of the assistant. The assistant compares current crop conditions to the previous year and a "normal"\* year and makes a subjective evaluation. Obviously, the results of the subjective method are subject to error depending on the particular circumstances. The assistant also randomly selects farm land and conducts sample surveys and crop cutting. This is referred to as the objective method. Data obtained from these two methods are reported upward in a hierarchical fashion, with tabulation and averaging occurring at each level.

Agricultural statistics are usually reported on a crop-year basis running from July 1-June 30. Crop areas are reported in acres and production in long tons. Metric units are not generally in use in Bangladesh. Rice production and yields are published in milled form, as is common in India. Rice production, area, and yield are also broken down into aus, aman and boro crops. In addition, many other agricultural statistics are available, including land utilization statistics, intensity of cropping, area irrigated by crop and by method, area under HYVs, distribution and price of fertilizers and pesticides, and storage and milling capacity statistics.

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\* Normal refers to the average yield of an average plot in a year of average character. This concept is based on a 1944-45 plot-to-plot survey.

TABLE XXII

BANGLADESH	Net cropped area '000' ha	Rice prod'n. milled '000' mt	Rice area '000' ha	Rice yields milled mt/ha	Rice area irrigated '000' ha
Year (A)	1	2	3	4	5
1944/45	7150		6378		44
1945/46	7491		7524		45
1946/47	7758		8031		126
1947/48	8922	6844	7698	0.89	119
1948/49	9048	7796	7867	0.99	115
1949/50	9043	7495	7909	0.95	127
1950/51	9005	7461	8103	0.92	120
1951/52	9010	7147	8222	0.87	123
1952/53	9035	7453	8415	0.89	156
1953/54	9046	8377	8914	0.94	157
1954/55	8960	7711	8641	0.89	146
1955/56	8770	6487	7892	0.82	179
1956/57	8765	8316	8122	1.02	147
1957/58	8769	7720	8195	0.94	245
1958/59	8770	7032	7955	0.88	180
1959/60	8772	8618	8566	1.01	263
1960/61	8777	9672	8864	1.09	285
1961/62	8887	9618	8490	1.13	368
1962/63	8884	8870	8701	1.02	433
1963/64	8887	10624	9015	1.18	457
1964/65	8927	10503	9236	1.14	446
1965/66	9044	10501	9367	1.12	488
1966/67	9084	9575	9078	1.05	517
1967/68	9100	11171	9897	1.13	568
1968/69	9076	11344	9750	1.16	802
1969/70	8814	12006	10322	1.16	902
1970/71	8651	11143	9920	1.12	1011
1971/72	8251(L)	9931	9305	1.07	962
1972/73	8440	10089	9637	1.05	1046
1973/74	8496	11909	9886	1.20	1145
1974/75	8326	11287	9800	1.15	1277
1975/76	8492	12762	10338	1.23	1218
1976/77	8280	11775	9894	1.19	980
1977/78	8381	12936	10035	1.29	1188
1978/79	8424	12874	10123	1.27	1177
1979/80	8454	12740	10168	1.25	1230
1980/81	8569(Q)	13881	10317	1.35	1260
1981/82	8591	15024	10468	1.44	1340

TABLE XXII (cont'd)

BANGLADESH	Rice imports milled '000' mt	Rice exports milled '000' mt	Population midyear '000' persons	Farm-harvest price milled Taka/mt	Procurement price milled Taka/mt
Year (A)	6	7	8	9	10
1941/42			41997(B)		
1942/43					
1943/44					
1944/45				323(C)	
1945/46				297	
1946/47				403	
1947/48	6(D)	-		597(E)	286(F)
1948/49	20	-	41200(G)	698	329
1949/50	44	-	41500	517	326
1950/51	-	-	42635	458	321
1951/52	-	-	43610	517	321
1952/53	-	-	44607	519	321
1953/54	-	-	45626	387	361
1954/55	-	-	46669	386	361
1955/56	56	-	47741	528	No Proc.
1956/57	541	-	48837	644	No Proc.
1957/58	439(J)	-	49963	634	475
1958/59	471	-	51360	668	513
1959/60	481	-	52362	681	517
1960/61	408	-	53645	468	517
1961/62	363	-	54992	720	517
1962/63	274	-	56401	756	517
1963/64	574	-	57869	688	537
1964/65	237	-	59393	704	592
1965/66	194	-	60976	885	561
1966/67	422	-	62620	1011	582
1967/68	367	-	64321		714
1968/69	154	-	66074		766
1969/70	317	-	67876		808
1970/71	347	-	69700		797
1971/72	681	-	71583		797
1972/73	390	-	73163	1085(M)	1001
1973/74	82	-	74933	1515	1419
1974/75	266	-	77240	3234	1919
1975/76	396	-	98439	1953	1919
1976/77	196	-	79761	1739	1550(P)
1977/78	305	-	81840	2190	1730
1978/79	57	-	83951	2540	
1979/80	1918	-	86128	3269	
1980/81	84	-	88373	2695	
1981/82	256	-	90680	3436(Q)	
1982/83				3995(R)	

TABLE XXII (cont'd)

BANGLADESH	Wholesale rice price milled avg. Taka/mt	Retail rice price milled main market Dacca-Taka/mt	Farm wage rate Taka/day	Domestic apparent per capita rice availability kg/cap/yr
Year (A)	11	12	13	14
1948/49			1.81	189
1949/50			1.92	181
1950/51	519(H)		1.62	175
1951/52	586	652(I)	1.56	164
1952/53	633	663	1.52	167
1953/54	576	542	1.39	184
1954/55	385	363	1.32	165
1955/56	481	595	1.31	136
1956/57	746	767	1.46	170
1957/58	751	769	1.76	155
1958/59	799	809	1.84	137
1959/60	847	856	1.83	165
1960/61	773	786	1.95	180
1961/62	788	798	2.18	175
1962/63	840	880	2.25	157
1963/64	724	830	2.41	184
1964/65	767	820	2.65	177
1965/66	913	950	2.53(K)	172
1966/67	1170	1260	2.95	153
1967/68	1061	1130	2.92	174
1968/69	1157	1270	2.89	172
1969/70	1156	1290	2.96	177
1970/71	1133	1240	3.13	160
1971/72	1225	1380	3.38	139
1972/73	1835	1900	4.72	138
1973/74	2532(N)	2790	6.69	159
1974/75	5837(O)	5150	9.05	146
1975/76	5598	6340	8.82	130
1976/77	3363	3579	8.93	148
1977/78	4270	4387	9.44	159
1978/79	4583	4966	10.88	153
1979/80	6411	6913	13.53	148
1980/81	5565	6204	14.40	157
1981/82	7108	7613	16.90	166
1982/83	7491(R)	8296(R)	16.32(S)	

TABLE XXII (cont'd)

BANGLADESH	Main rice crop area Aman '000' ha	Main rice crop prod'n. Aman milled '000' mt	Main rice crop yield Aman milled mt/ha	Net cropped ha/person
Year (A)	15	16	17	18
1945/46	5338			
1946/47	5656			
1947/48	5406	5065	0.94	.22
1948/49	5613	6002	1.07	.22
1949/50	5675	5837	1.03	.21
1950/51	5648	5358	0.95	.21
1951/52	5681	5193	0.91	.20
1952/53	5849	5414	0.93	.19
1953/54	6012	5840	0.97	.19
1954/55	5850	5348	0.91	.18
1955/56	5256	4325	0.82	.18
1956/57	5418	5882	1.09	.17
1957/58	5521	5237	0.95	.17
1958/59	5324	5050	0.95	.17
1959/60	5787	6084	1.05	.16
1960/61	5904	6680	1.13	.16
1961/62	5703	6759	1.19	.16
1962/63	5760	6143	1.07	.15
1963/64	5915	7407	1.25	.15
1964/65	6118	7379	1.21	.15
1965/66	5942	6908	1.16	.14
1966/67	5694	6014	1.06	.14
1967/68	5946	6921	1.16	.14
1968/69	5832	6980	1.20	.13
1969/70	6011	7062	1.17	.12
1970/71	5745	6007	1.05	.11
1971/72	5416	5786	1.07	.11
1972/73	5719	5677	0.99	.11
1973/74	5724	6806	1.19	.11
1974/75	5455	6096	1.12	.09
1975/76	5765	7158	1.24	.10
1976/77	5814	7030	1.21	.10
1977/78	5775	7555	1.31	.10
1978/79	5811	7563	1.30	.10
1979/80	5979	7420	1.24	.10
1980/81	6042	7963	1.32	.10
1981/82	6017	7946	1.32	.09

Notes to Appendix Table XXII: Bangladesh

Administratively, Bangladesh has four main divisions: Dacca, Chittagong, Khulna, and Rajshahi. On August 15, 1947, India and Pakistan became independent. Until the conclusion of the Pakistan-Bangladesh war in December 1971, Bangladesh was the eastern wing of Pakistan and was referred to as East Pakistan. At the close of the war, East Pakistan became an independent entity under the name Bangladesh.

A/1944/45-1981/82: Bangladesh statistics are generally recorded in years running July 1-June 30.

B/1941: Census figure.

C/1944/45-1946/47: Farm-harvest price is for autumn rice and is an average of 15 districts.

D/1947/48-1956/57: Rice imports include imports from West Pakistan and from abroad. Rice import series is from the Food Wing in Karachi.

E/1947/48-1966/67: Farm-harvest price is an average farm-gate price for winter (aman) and autumn (aus) rice.

F/1947/48-1975/76: Procurement price is for milled, coarse rice. From 1947/48-1948/49, procurement was voluntary, but from 1949/50-1953/54 was compulsory. During years of compulsory levy, producers were required to sell all rice surplus of their own family subsistence needs to the government at the fixed (and low) procurement price. There was no procurement made in 1955, and procurement was voluntary from 1957 onwards.

G/1948/49-1981/82: Population is for July 1 of the year in question.

1975-1981 are projections based on the 1974 census.

H/ 1950/51-1982/83: Wholesale rice price is a main-market price (Dacca) for medium rice.

I/ 1951/52-1982/83: Retail rice price is for medium rice.

J/ 1957/58-1965/66: Rice imports include imports from West Pakistan and from abroad. The Directorate of Food of East Pakistan is the primary source.

K/ 1965/66-1982/83: Farm wage rate is an average rate for unskilled agricultural labor.

L/ 1971/72: Declines in cropped area occurred because of the changing political status of Bangladesh.

M/ 1972/73-1982/83: Farm-harvest price is an average of aus, aman, boro, and irrigated paddy rice prices.

N/ 1973/74: Wholesale rice price is the average of Jan.-Sept. and Dec. prices only.

O/ 1974/75: Wholesale rice price is the average of July-Dec. prices only.

P/ 1976/77-1977/78: Procurement price is for paddy.

Q/ 1980/81-1981/82: Data are for net area sown.

R/ 1982/83: Wholesale and retail main-market rice price and average growers' price of paddy are averages of July-Feb. only.

S/ 1982/83: Farm wage rate is an average of July-Feb. only.

Sources of Data for Appendix Table XXII: Bangladesh

1. Net Cropped Area

1944/45-1946/47: East Pakistan. Directorate of Agriculture, Agricultural Statistics of East Pakistan (Dacca: East Pakistan Government Press).

1947/48-1969/70: Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).

1970/71-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

2. Rice Production

1947/48-1972/73: Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).

1973/74-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

3. Rice Area

1944/45-1946/47: East Pakistan. Directorate of Agriculture, Agricultural Statistics of East Pakistan (Dacca: East Pakistan Government Press).

1947/48-1972/73: Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).

1973/74-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

4. Rice Yields

1947/48-1981/82: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1944/45-1946/47: East Pakistan. Directorate of Agriculture, Agricultural

Statistics of East Pakistan (Dacca: East Pakistan Government Press).  
1947/48-1966/67: East Pakistan. Superintendent, Government Printing,  
Season and Crop Report of East Pakistan (Dacca: East Bengal Government  
Press).

1967/68-1969/70: Bangladesh. Bureau of Statistics, Monthly Statistical  
Bulletin of Bangladesh (Dacca).

1970/71-1974/75: Bangladesh. Bureau of Statistics, The Yearbook of Agri-  
cultural Statistics of Bangladesh (Dacca).

1975/76-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical  
Bulletin of Bangladesh (Dacca).

6. Rice Imports

1947/48-1956/57: Pakistan. Ministry of Agriculture and Works, Food and  
Agriculture Division, Yearbook of Agricultural Statistics (Rawalpindi).

1957/58-1970/71: East Pakistan. East Pakistan Bureau of Statistics,  
Statistical Digest of East Pakistan (Dacca).

1971/72-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical  
Bulletin of Bangladesh (Dacca).

7. Rice Exports

No exports made.

8. Population

1941: East Pakistan. East Pakistan Bureau of Statistics, Statistical Digest  
of East Pakistan (Dacca: 1966).

1948-1949: Pakistan. Ministry of Food and Agriculture, Directorate of  
Agricultural Economics and Statistics, Agricultural Statistics of Pakistan,  
Fact Series 5 (Rawalpindi: 1961).

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington, D.C.: 1978).

1960-1969: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1950-1979 (Washington, D.C.: 1980).

1970-1981: U.S. Department of Commerce, Bureau of the Census, Demographic Estimates for Countries With a Population of 10 Million or More: 1981 (Washington, D.C.: 1981).

9. Farm-Harvest Price

1944/45-1946/47: East Pakistan. Directorate of Agriculture, Agricultural Statistics of East Pakistan (Dacca: East Pakistan Government Press).

1947/48-1966/67: East Pakistan. Superintendent, Government Printing, Season and Crop Report of East Pakistan (Dacca: East Bengal Government Press).

1972/73-1982/83: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

10. Procurement Price

1947/48-1969/70: Pakistan. Ministry of Agriculture and Works, Food and Agriculture Division, Yearbook of Agricultural Statistics (Rawalpindi).

1970/71-1974/75: Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).

1975/76: Bangladesh. Ministry of Food.

1976/77-1977/78: Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, Department of Agricultural Economics, 1980).

11. Wholesale Milled Rice Price

1950-1955: Bangladesh. Bureau of Statistics, Statistics Division, Ministry of Planning, The Yearbook of Agricultural Statistics of Bangladesh (Dacca).

1956-1969: Bangladesh. Bureau of Statistics, Statistical Digest of Bangladesh, No. 7 (Dacca: Secretariat Buildings, 1970).

1970/71-1982/83: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

12. Retail Milled Rice Price (Main Market)

1951-1955: Pakistan. Central Statistical Office, Economic Affairs Division, Pakistan Statistical Yearbook (Karachi).

1956-1969: East Pakistan. Bureau of Statistics, Statistical Digest of Bangladesh, No. 7 (Dacca: Secretariat Buildings, 1970).

1970/71-1982/83: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

13. Farm Wage Rate

1948/49-1964/65: Clay, Edward, Institutional Change and Agricultural Wages in Bangladesh, Staff Paper 76-5 (New York, N.Y.: Agricultural Development Council, 1976).

1965/66-1968/69: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

1969/70-1977/78: Bangladesh. Bangladesh Bureau of Statistics, Ministry of Planning, Statistical Yearbook of Bangladesh (Dacca: 1979).

1978/79-1982/83: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

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\* Statistical Digest of Bangladesh supersedes the Statistical Digest of East Pakistan in 1970/71.

14. Domestic Apparent Per Capita Rice Availability

1948/49-1980/81: Domestic apparent per capita rice availability is calculated by dividing milled production (2) by population (8) on an annual basis.

15. Main Rice Crop Area (Aman)

1945/46-1946/47: East Pakistan. Directorate of Agriculture, Agricultural Statistics of East Pakistan (Dacca: East Pakistan Government Press).

1947-1972: Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).

1973/74-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

16. Main Rice Crop Production (Aman)

1947/48-1972/73: Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).

1973/74-1981/82: Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca).

17. Main Rice Crop Yield (Aman)

1947/48-1981/82: Main rice crop yields are calculated by dividing aman production (16) by aman area (15) on an annual basis.

Country Sources of Basic Data: Bangladesh

1. Bangladesh. Ministry of Agriculture, Bangladesh Agriculture in Statistics (Dacca: 1974).
2. Bangladesh. Bureau of Statistics, Monthly Statistical Bulletin of Bangladesh (Dacca: 1972- ).
3. Bangladesh. Bureau of Statistics, Statistics Division, The Yearbook of Agricultural Statistics of Bangladesh (Dacca). Formerly The Yearbook of Agricultural Statistics.
4. Bangladesh. Bureau of Statistics, Statistical Digest of Bangladesh (Dacca: Secretariat Buildings). Formerly Statistical Digest of East Pakistan.
5. East Pakistan. Season and Crop Report of East Pakistan (Dacca: East Bengal Government Press).
6. East Pakistan. East Pakistan Bureau of Statistics, Abstract of Agricultural Statistics of East Pakistan (Dacca).
7. Pakistan. Ministry of Agriculture and Works, Department of Agricultural Economics and Statistics, Land and Crop Statistics of Pakistan, Fact Series III (Karachi: Government of Pakistan Press, June 1962).

Useful Secondary Sources

1. Ahmad, Nafis, A New Economic Geography of Bangladesh (New Delhi: Vikas Publishing House PVT Ltd., 1976).
2. Alim, A., An Introduction to Bangladesh Agriculture (Dacca: M. Alim, 1974).
3. Nyrop, R. et al., Area Handbook for Bangladesh (Washington, D.C.: Foreign Area Studies, The American University, 1975).
4. Ahmed, Kalimuddin, Agriculture in East Pakistan (Dacca: M/s. Ahmed Brothers Publications, 1965).

Important Conversion Factors

The Bangladesh crop year runs from July 1-June 30.

1 maund (md.) = 82.29 lbs. = 37.36 kg.

1 seer (sr.) = 2.05 lbs. = .93 kg.

lakh = 1,000,000

crore = 1,000,000,000

1 long ton = 1.06605 metric tons

The milling rate for rice is about 62 percent.

Glossary of Seasons in Bangladesh

aghani - (haimantic) winter dry season running from November through February.

rabi - summer season running from March through May.

kharif - (bhadoi) monsoon season running from June through October.

aus - summer paddy crop harvested July-August.

aman - main rice crop harvested November-December and occupying 41 percent  
of total cropped area.

boro - dry season, irrigated paddy crop harvested March-June.

Money Unit

Beginning in 1971, a new currency unit called "taka" replaced the rupee.

The values are identical.

In 1980, 1 US\$ = 16.25 taka official exchange rate

In 1980, 1 US\$ = 237.33 taka free-market exchange rate

XXIII: INDIA

Rice Statistics in India

In general, Indian statistics are very complete for all major data categories and are widely available in many different sources. In addition, changes in reporting methods are usually carefully documented, and time series data since 1900 are quite complete. Relatively speaking, India has one of the most extensive and intensive statistical collection systems in Asia.

In 1868, the first published collection of Indian statistics, Statistical Abstract for British India,<sup>\*</sup> appeared. In 1875, a Department of Agriculture and Commerce was organized, and later provincial directors of agriculture and statistical officers were appointed. The Office of Director-General of Commercial Intelligence and Statistics (CIS) was created in 1905. In 1933, a Statistical Research Bureau was established to aid official analysis and interpretation of economic statistics. Finally, in 1950, the Central Statistical Organization (CSO) was created to coordinate all statistical activities in India. Currently, responsibility for agricultural statistics is in the hands of the Directorate of Economics and Statistics (DES) in the Ministry of Agriculture, although CSO oversees the Directorate's work.

In the pre-World War II period, crop acreage data were based on field-to-field enumerations carried out by village officials under the supervision of district officials. Crop area data are considered to be quite accurate, partly because most land was professionally surveyed. Crop area always referred to the actual area sown, regardless of whether the crop reached maturity.

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<sup>\*</sup>The territory of British India is somewhat different from present day India. It included parts of Burma, Nepal, Pakistan, and Bangladesh and excluded some sections of India.

Yields were estimated using the standard formula: output = crop acreage x standard yield per acre x seasonal condition of the crop. Standard yield was supposed to represent the yield as a constant on land of average quality in a year of average weather conditions. Standard yields were maintained for at least a five-year period. Seasonal condition represented the proportion of current yields to the standard yield, and was based on village reports and the assessment of the district official. Production figures are considered to be somewhat less reliable than area figures.

For further, in depth discussion of pre-war agricultural statistics collection methods and adjusted time series for area, production, and yield of most economically important crops including rice, readers may wish to refer to Agricultural Trends in India, 1891-1947: Output, Availability, and Productivity by George Blyn.

Since World War II, Indian statistical collection has been further expanded and improved. Unlike many other Asian countries that reorganized the statistical collection apparatus in the post-war period, the British-style system was retained in India, and pre- and post-war statistics are very comparable. This makes long-term trend analysis a possibility. Boundary changes present a small problem, but most statistics are also available in a disaggregated form, eliminating or reducing this difficulty. In the period prior to 1937, parts of present day Burma and Pakistan were included in Indian statistics. However, in the tables accompanying this text, Burma is excluded. Since World War II, Indian borders have remained essentially the same, with the exception of the addition of Sikkim in April, 1975. Statistics for Sikkim are not available, but this makes little difference for national-level rice statistics because Sikkim rice production is not very large.

At the national level, DES is responsible for the collection and aggregation of agricultural area and production statistics. DES relies on the states for the collection of raw data. State statistical apparatus varies from area to area. In some states, a statistical bureau collects statistics, in others an agricultural department or a land records department. Actually, primary data is collected at the village level by village accountants (patwari) under the supervision of district officials using the same basic methods as those employed in the pre-war period. However, random sample crop-cutting surveys are now extensively used in the estimation of yields, although the traditional method, i.e., calculating yield as a percent of "normal" or standard yield and condition factor, is still in use in some areas.

In the case of rice area and production statistics, there are two separate series available. The official series, collected and compiled by DES, is favored by most analysts and is the one used in the accompanying table, but the National Sample Survey Organization also produces a series based on crop cutting and other activities carried out during National Sample Surveys. The two series are not consistent because of the use of different data bases, seasons, etc. In addition, official rice area and production series suffer from problems of internal inconsistency. As in most countries, as improvements are made through time, it is impossible to adjust data very far back for consistency. Indian statistical analysts have overcome this problem to a partial extent through the use of indexes. Indexes regularly accompany statistical compilations of this type.

Rice area is reported in thousand hectares, rice production in thousand metric tons, and rice yields in quintals/hectare. Rice statistics are further subdivided by season into autumn, winter, and summer rice. The winter crop

(rainy season) is the largest, closely followed by the autumn crop, and the summer crop is much smaller. In addition, rice statistics can be found by variety. Indian rice statistics are unusual in that all data, including production and farm-harvest prices, are recorded in milled form. India also maintains an extensive pre-harvest monitoring system. Two to three formal forecasts for rice area and production are made each year prior to final estimates. These forecasts help policy makers formulate decisions on exports, stocks, procurements, and rationing. Rice production and acreage are reported on a May-June crop year.

TABLE XXIIIa

INDIA	Net sown (A) area '000' ha	Rice prod'n. (B) paddy '000' mt	Rice area (B) harvested '000' ha	Rice yields (B) paddy mt/ha	Rice area (C) irrig. '000' ha
Year	1	2	3	4	5
1900	75194(F)				
1901	78384	24223	25594	0.95	
1902	78523	29710	27089	1.10	
1903	79505	26758	25220	1.06	
1904	79042	26275	26455	0.99	
1905	79091	24622	27203	0.91	
1906	81591	25893	26519	0.98	
1907	80247	21530	26685	0.81	
1908	82777	22893	25312	0.90	
1909	84667	31962	27611	1.16	
1910	84951	32602	27680	1.18	
1911	82070	29070	26752	1.09	
1912	85118	26911	27517	0.98	
1913	82993	25983	26799	0.97	
1914	86365	24667	27152	0.91	
1915	84113	29842	27579	1.08	
1916	87158	30772	28359	1.09	
1917	86338	31493	28286	1.11	
1918	75527	20658	27087	0.76	
1919	84093	28386	27487	1.03	7082
1920	83948	23682	27334	0.87	6931
1921	83904	28306	27748	1.02	6747
1922	84495	28973	27992	1.04	6874
1923	83524	23946	26578	0.90	6440
1924	85023	25697	27170	0.95	6345
1925	84473	25659	27526	0.93	6827
1926	84424	24497	26679	0.92	6388
1927	83624	23051	25982	0.89	6701
1928	85305	26941	27680	0.97	6772
1929	85206	26216	26934	0.97	7033
1930	85492	26897	27257	0.99	7330
1931	85603	28166	27747	1.02	6985
1932	85078	25755	27097	0.95	7173
1933	86673	25291	27244	0.93	7200
1934	84571	25241	27016	0.93	6898
1935	84932	22696	27351	0.83	7138
1936	86556	27138	27832	0.98	7046
1937	86465	26141	28024	0.93	7462
1938	84807	23292	28316	0.82	7418
1939	68483	24590	28366	0.87	7533

TABLE XXIIIa (cont'd)

INDIA	Rice imports milled '000' mt	Rice exports milled '000' mt	Population '000' persons	Farm-harvest (D) price milled Rs/mt
Year	6	7	8	9
1911	537	691		
1912	618	700		
1913	1737	601		
1914	2397	440		
1915	2497	410		
1916	2144	425		
1917	1235	457		
1918	1843	416		
1919	3710	137		
1920	2188	127		
1921	2076	154		167(H)
1922	1433	338		82
1923	1172	420		80
1924	1351	435		90
1925	2060	307		97
1926	1415	293		93
1927	2205	319		93
1928	2620	302		90
1929	2131	307		163(J)
1930	1943	310		118
1931	2494	265	279070(K)	99
1932	2123	256		92
1933	3567	247		86
1934	4370	238		93
1935	3483	217		98
1936	3282	264		95
1937	2718	255		99
1938	3193	308		98
1939	2226	267		107(O)

TABLE XXIIIa (cont'd)

INDIA	Wholesale rice price milled average Rs/mt	Retail rice price milled average Rs/mt	Farm wage rate Rs/day
Year	11	12	13
1900		115(G)	
1901	98	112	
1902	90	104	
1903	83	111	
1904	80	97	
1905	90	105	
1906	120	125	
1907	131	146	
1908	143	159	
1909	121	133	
1910	104	123	
1911	105	127	
1912	118	140	
1913	137	148	
1914	143	153	
1915	144	151	
1916	137	146	
1917	123	141	
1918	128	168	
1919	200	230	
1920	209	240	
1921	148	230	0.24(I)
1922	140	216	0.24
1923	122	195	0.27
1924	145	201	0.35
1925	140	211	0.36
1926	146	212	0.39
1927	136	213	0.38
1928	124	183	0.41
1929	123	193	0.44
1930	105	164	0.42
1931	99(L)	120	0.42
1932	82	108	0.38
1933	88	93	0.36
1934	97	100	0.32
1935	110(M)	108	0.22(N)
1936	101	111	0.22
1937	98	111	0.23
1938	96	110	0.23
1939	107	118	0.25

TABLE XXIIIb

INDIA	Net sown area (A)	Rice prod'n. (B) milled	Rice area (B)	Rice yield (B) milled	Rice area irrig. (C)
Year	'000' ha	'000' mt	'000' ha	mt/ha	'000' ha
	1	2	3	4	5
1940	69385	21102	27841	0.76	8050
1941	69277	24419	28183	0.87	7495
1942	69610	23354	28585	0.82	7648
1943	70537	29433	30793	0.96	7454
1944	71013	27005	31930	0.85	7514
1945	69824	25540	30583	0.84	7321
1946	70632	26551	31241	0.85	7858
1947	99431	21244	26088	0.81	8768
1948	98485	22597	29356	0.77	5099
1949	114705	23542	30519	0.77	5195
1950	118746	20576	30810	0.67	9844
1951	119400	21300	29830	0.71	9650
1952	123442	22899	29969	0.76	1687
1953	126806	28214	31289	0.90	10476
1954	127845	25219	30764	0.82	10551
1955	129156	27557	31521	0.87	11035
1956	130848	29037	32277	0.90	11473
1957	129080	25525	32298	0.79	11747
1958	131828	30847	33172	0.93	12045
1959	132939	31676	33820	0.94	12146
1960	133199	34574	34128	1.01	12523
1961	135399	35663	34694	1.03	12986
1962	136341	33217	35695	0.93	13361
1963	136483	36998	35809	1.03	13254
1964	138120	39308	36462	1.08	13556
1965	136198	30589	35470	0.86	12909
1966	137232	30438	35251	0.86	13336
1967	139876	37612	36437	1.03	13848
1968	137454	39761	36967	1.08	13577
1969	138695	40430	37680	1.07	14199
1970	140784	42225	37592	1.12	14339
1971	140040	43068	37758	1.14	14082
1972	137570	39245	36688	1.07	14420
1973	143060	44051	38286	1.15	14673
1974	138380	39579	37889	1.04	14656
1975	142220	48740	39475	1.23	15051(Y)
1976	140230	41917	38511	1.09	14730
1977	142800	52671	40283	1.31	
1978	143800	53770	40482	1.33	
1979		42330	39414	1.07	
1980		53231	39773	1.34	
1981		53593	40706	1.32	
1982		46000	39000	1.18	

TABLE XXIIIb (cont'd)

INDIA	Rice imports milled '000' mt	Rice exports milled '000' mt	Population midyear '000' persons	Farm-harvest price (D) paddy Rs/mt	Procurement price (D) milled rice Rs/mt
Year	6	7	8	9	10
1940	1272	257		127	
1941	1002	334	318830(K)	146	
1942	18	259		243	
1943	-	28		376	
1944	-	10		288(P)	
1945	16	45		317	
1946	240	-		326	
1947	326	-		397	281(Q)
1948	572	-		427(R)	365
1949	664	-		487	342
1950		-	369880(S)	575	343
1951		-	376222(K)	609	358
1952		-	382871	507	410
1953		-	389813	472	410
1954		7	397016	377	
1955		104	404478	411	
1956		43	412204	357(V)	
1957	281	-	420207	357	
1958	594	1	428486	372	
1959	203	-	437037	392	
1960	225	-	445857(W)	379	
1961	317	-	454946(K)	385	
1962	225	-	464230	325	
1963	434	3	473850	387	
1964	678	3	484027	486	375(X)
1965	637	3	494882	590	399
1966	929	2	506005	652	482
1967	471	4	517457	827	522
1968	472	3	529200	711	524
1969	522	15	541296	633	530
1970	361	27	553619	615	531
1971	243	16	566180(K)	702	532
1972	134	15	578712	835	545
1973	36	18	591328	1109	700
1974	47	41	603797	1326	810
1975	158	19	516551	1065	809
1976	202	38	629760	930(AA)	740
1977	19	18	642552	1030	770
1978	4	143	654895	982	850
1979	2	333	667326	1294	950
1980	7	483		1242	1050
1981	10(EE)	675(EE)		1342	1150
1982	315	250			1220

TABLE XXIIIb (cont'd)

INDIA	Wholesale rice price milled Rs/mt	Retail rice price milled Rs/mt	Farm wage rate Rs/day	Domestic apparent per capita paddy availability (E) kg/cap/yr
Year	11	12	13	14
1940	128	135	0.25	
1941	158	177	0.25	77
1942	235	254	0.27	
1943	438	456		
1944	346	344		
1945	350	337		
1946	268	271		
1947	298	289		
1948	327	410		
1949	497	536		
1950	581	540	1.35(T)	56
1951	614	612	1.36	57
1952	560	633	1.32	60
1953	554	857	1.34	72
1954	442	523	1.34(U)	64
1955	390	450	1.29	68
1956	476	532	1.10	70
1957	542	624	1.15	61
1958	565	637	1.22	72
1959	541	613	1.15	72
1960	557	628	1.29	78
1961	549	608	1.36	78
1962	556	612	1.48	72
1963	621	714	1.56	78
1964	790	778	1.64	81
1965	712	789	1.91	62
1966	956	1010	2.20	60
1967	1234	1157	2.47	73
1968	1209	1223	2.52	75
1969	1130	1244	2.63	75
1970	1183	1263	2.87	76
1971	1177	1268	2.94	76
1972	1326	1408	2.90	68
1973	1603	1708	2.93	74
1974	2214	2228	3.28	66
1975	1712	2590(Z)	3.60	79
1976	1716	1970	3.74	67
1977	1786	2050	3.81	82
1978	1789	2355	4.88(BB)	82
1979	1968	2710(CC)	5.18	63
1980	2029	3177(DD)	5.90	
1981	2228		6.31	
1982	2336			

TABLE XXIIIb (cont'd)

INDIA	Main rice crop area (A) winter '000' ha	Main rice crop prod'n. (A) winter milled '000' mt	Main rice crop yield (A) winter milled '000' mt	Net sown ha/person
Year	15	16	17	18
1950				.32
1951				.32
1952				.32
1953				.32
1954				.32
1955				.32
1956				.32
1957				.32
1958				.31
1959				.31
1960				.30
1961				.30
1962	20440	19939	0.98	.30
1963	20607	22116	1.07	.29
1964	20907	23752	1.14	.29
1965	20275	18880	0.93	.28
1966	18485	15454	0.84	.27
1967	19185	19265	1.00	.27
1968	19057	21737	1.14	.27
1969	19475	20461	1.05	.26
1970	18820	20211	1.07	.26
1971	18817	20651	1.10	.25
1972	18766	20360	1.08	.25
1973	19782	21923	1.11	.24
1974	19602	20928	1.07	.24
1975	20310	24106	1.19	.23
1976	20278	21352	1.05	.23
1977	20691	25457	1.23	.22
1978	20313	26265	1.29	.22
1979	19308	20215	1.05	.22
1980	20257	26944	1.33	

Notes to Appendix Tables XXIIIa and XXIIIb: India

A/ In computing the aggregate net area sown, area sown more than once has been counted only once. Data relate to the Indian crop year, May-June.

B/ Data are in Indian crop years, May-June.

C/ Area irrigated more than once in a harvest season is counted only once. Data in Indian crop years, May-June.

D/ Data in Indian crop-marketing years, October-September.

E/ India is one of the few Asian countries where rice is not the primary staple foodgrain. Wheat, millet, and other coarse grains are also very important components in the average Indian diet, particularly on a regional basis. Thus, the apparent rice availability shown here is not an indication of per capita food availability.

F/ 1900-1914: Net area cropped.

G/ 1900-1974: Average retail rice price is for common rice.

H/ 1921-1928: Unhusked rice price, including Burma.

I/ 1921-1942: Farm wage rate is for males in tea gardens in Assam.

J/ 1929-1938: Farm prices for milled, winter-season rice.

K/ 1931, 1941, 1951, 1961, 1971: Census years.

L/ 1931-1934: Average wholesale price is for Nagra No. 1 rice and is an average for the last weeks of April, July, October, and January only.

M/ 1935-1982: Average wholesale rice price is for mixed, mostly coarse rice.

N/ 1935-1942: Male farm wage rate is for settled laborers.

O/ 1939-1943: Farm price is an average of seven states for milled rice.

P/ 1944-1947: Farm-harvest price is for winter season.

Q/ 1947-1953: Procurement price is an average of 16 states, mostly for milled rice.

R/ 1948-1955: Farm-harvest price is for milled rice.

S/ 1950-1959: Population is as of July 1 of the year in question.

T/ 1950-1977: Farm wage rate was gathered by ILO sources.

U/ 1954-1977: Farm wage rate is an average of male and female wage rates.

V/ 1956-1981: Farm-harvest price is for paddy.

W/ 1960-1979: Population figures are for July 1 of the year in question.

X/ 1964-1982: Procurement prices are for common varieties of standard quality in paddy form in marketing years, October-September.

Y/ 1975-1976: Data are provisional.

Z/ 1975-1980: Average retail rice price is for medium rice and is an average of Delhi, Bombay, Madras, Ahmedabad, Kanpur, Bangalore, and Hyderabad.

aa/ 1976-1977: Farm-harvest price is an average of three rice varieties.

bb/ 1978-1981: Farm wage rate is an average male wage rate for field labor for an eight hour day. Men always make a higher wage than women or children. Women usually receive two-thirds of what men earn for similar jobs.

cc/ 1979: Average retail price is an average of January and April-September only.

dd/ 1980: Average retail rice price is an average of March-September only.

ee/ 1981-1982: USDA reports rice imports and exports on a November-October marketing year basis.

Sources of Data for Appendix Tables XXIIIa and b: India\*

1. Net Sown Area

1900-1938: India. Department of Statistics, Agricultural Statistics of India (name changed to Indian Agricultural Statistics in 1950) (Calcutta: Superintendent Government Printing).

1939-1943: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1944-1949: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Indian Agricultural Statistics (Delhi).

1950-1970: India. Directorate of Economics and Statistics, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).

1971-1978: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

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\* Although British India included parts of present-day Burma prior to 1937, statistics recorded here do not include Burma unless noted. Pakistan is also included in the Indian data through 1946.

2. Rice Production

- 1901-1935: India. Department of Commercial Intelligence and Statistics, Statistical Abstract for British India (Delhi: Manager of Publications).
- 1936-1942: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).
- 1943-1948: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics of India, 1950 (Delhi: Manager of Publications, 1952).
- 1949-1977: India. Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).
- 1978-1980: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).
- 1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

3. Rice Area

- 1901-1935: India. Department of Commercial Intelligence and Statistics, Statistical Abstract for British India (Delhi: Manager of Publications).
- 1936-1942: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).
- 1943-1948: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics of India, 1950 (Delhi: Manager of Publications, 1952).
- 1949-1977: India. Directorate of Economics and Statistics, Ministry of

Agriculture and Irrigation, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).

1978-1980: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

4. Rice Yields

1901-1982: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1919-1935: India. Department of Commercial Intelligence and Statistics, Statistical Abstract for British India (Delhi: Manager of Publications).

1936-1942: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1943-1949: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics of India (Delhi: Manager of Publications, 1952).

1950-1961: India. Central Statistical Organization, Department of Statistics, Basic Statistics Relating to the Indian Economy (New Delhi: 1974).

1962-1976: India. Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).

6. Rice Imports

1911-1939: Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford: Stanford University Press, 1941).

1940-1941: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1942-1973: India. Department of Statistics, Central Statistical Organization, Statistical Abstract India (New Delhi).

1974-1980: India. Directorate of Economics and Statistics, Ministry of Agriculture, Bulletin on Food Statistics (New Delhi: 1980).

1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

#### 7. Rice Exports

1911-1939: Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford: Stanford University Press, 1941).

1940-1941: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1942-1973: India. Department of Statistics, Central Statistical Organization, Statistical Abstract India (New Delhi).

1974-1980: India. Directorate of Economics and Statistics, Ministry of Agriculture, Bulletin on Food Statistics (New Delhi: 1980).

1981-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

#### 8. Population

1931, 1941: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics, 1950 (Delhi: Manager of Publications, 1952).

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Popu-

lation 1977 (Washington, D.C.: 1978).

1960-1979: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics 1950-79 (Washington, D.C.: 1980).

9. Farm-Harvest Price

1921-1938: India. Department of Commercial Intelligence and Statistics, Agricultural Statistics of India (Delhi: Manager of Publications).

1939-1942: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1943: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics of India, 1950 (Delhi: Manager of Publications, 1952).

1944-1947: India. Department of Statistics, Central Statistical Organization, Statistical Abstract India (New Delhi).

1948-1973: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Agricultural Prices in India (New Delhi).

1974-1975: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Farm Harvest Prices of Principal Crops (New Delhi).

1976-1977: Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, Department of Agricultural Economics, 1980).

1978-1981: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

10. Procurement Price

1947-1953: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics (Delhi:

Manager of Publications).

1964-1982: India. Directorate of Economics and Statistics, Ministry of Agriculture, Bulletin on Food Statistics (New Delhi).

11. Wholesale Rice Price

1901-1920: India. Department of Statistics, Prices and Wages in India (Calcutta: Superintendent Government Printing, 1922).

1921-1935: India. Department of Commercial Intelligence and Statistics, Statistical Abstract for British India (Delhi: Manager of Publications).

1936-1942: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics in India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1943-1948: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics of India, 1950 (Delhi: Manager of Publications, 1952).

1949-1974: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Agricultural Prices in India (New Delhi).

1975: India. Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Indian Agriculture in Brief (New Delhi: Controller of Publications).

1976-1979: India. Directorate of Economics and Statistics, Ministry of Agriculture, Bulletin on Food Statistics (New Delhi: 1978-1980).

1980-1982: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

12. Retail Rice Price

1900-1920: India. Department of Statistics, Prices and Wages in India (Calcutta: Superintendent Government Printing, 1922).

1921-1935: India. Department of Commercial Intelligence and Statistics, Statistical Abstract for British India (Delhi: Manager of Publications).

1936-1942: India. Directorate of Economics and Statistics, Ministry of Agriculture, Abstract of Agricultural Statistics of India, 1936-37 to 1945-46 (Delhi: Manager of Publications, 1949).

1943-1945: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Abstract of Agricultural Statistics of India, 1950 (Delhi: Manager of Publications, 1952).

1946-1948: India. Department of Statistics, Central Statistical Organization, Statistical Abstract India (New Delhi).

1949-1974: India. Directorate of Economics and Statistics, Ministry of Food and Agriculture, Agricultural Prices in India (New Delhi).

1975-1980: India. Department of Statistics, Ministry of Planning, Monthly Abstract of Statistics (New Delhi).

13. Farm Wage Rate

1921-1942: India. Office of the Economic Adviser. Subramanian and Homfray, Recent Social and Economic Trends in India (Delhi: Manager of Publications).

1950-1977: Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, Department of Agricultural Economics, 1980), p. 40.

1978-1981: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

14. Domestic Per Capita Apparent Rice Availability

1941-1979: Domestic rice availability was calculated by dividing rice production (2) by population (8) on an annual basis.

15. Main Rice Crop Area (Winter)

1962-1976: India. Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).

1977-1980: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

16. Main Rice Crop Production (Winter)

1962-1976: India. Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).

1977-1980: India. Directorate of Economics and Statistics, Agricultural Situation in India (Delhi: Controller of Publications).

17. Main Rice Crop Yield (Winter)

1962-1980: Main rice crop yields were calculated by dividing main rice production (16) by main rice crop area (15) on an annual basis.

Country Sources of Basic Data: India

Only some of the most useful agricultural statistical sources are listed on the following page. There are many other journals and occasional publications that also contain useful information. Journal titles and the names of government agencies have frequently changed through time, but only current names and titles are listed.

1. India. Directorate of Economics and Statistics, Abstract of Agricultural Statistics (Delhi: Manager of Publications).

2. India. Directorate of Economics and Statistics, Agricultural Prices in

India (New Delhi).

3. India. Directorate of Economics and Statistics, Bulletin of Food Statistics (New Delhi).
4. India. Directorate of Economics and Statistics, Estimates of Area and Production of Principal Crops in India (New Delhi: Controller of Publications).
5. India. Central Statistical Organization, Statistical Abstract of India (New Delhi).
6. India. Directorate of Economics and Statistics, Agricultural Situation in India (New Delhi: Controller of Publications).

Useful Secondary Sources

1. India. Directorate of Economics and Statistics and the Statistical Adviser, Institute of Agricultural Research Statistics, Indian Council of Agricultural Research, Handbook on Methods of Collection of Agricultural Statistics in India (New Delhi: 1959).
2. India. Directorate of Economics and Statistics, Ministry of Agriculture, Agricultural Situation in India (Delhi: Controller of Publications).
3. Daggi, Vadilal, ed., A Regional Profile of Indian Agriculture (Bombay: Voral and Co., Publishers, 1974).
4. Sharma, D. P. and Desai, V. V., Rural Economy of India (New Delhi: Vikas Publishing House, 1980).
5. Blyn, George, Agricultural Trends in India 1891-1947 (Philadelphia: University of Philadelphia Press, 1966).
6. Gupta, A. P., Marketing of Agricultural Produce in India (Bombay: Vora and Co., Publishers PVT Ltd., 1975).

7. Elhance, D. N., Economic Statistics of India Since Independence (Delhi: Kitab Mahal Private, Ltd., 1962).

Important Conversion Factors

1 long ton = 1.016 mt.

1 maund (md.) = .037 mt.

Money Unit

money unit - rupee

In 1980, 1 US\$ = 27.93 rupees official exchange rate

In 1980, 1 US\$ = 8.38 rupees free-market exchange rate

Glossary

kharif = wet season

rabi = dry season

XXIV: NEPAL

Rice Statistics in Nepal

Administratively/politically, Nepal is divided into 14 zones, 15 districts, and 3,914 panchayats (basic political units) or villages. Villages are further subdivided into nine wards. The panchayat system of political organization proposes to simplify and streamline the process of the choice of leaders at all levels of society. At the lowest level of wards, or village divisions, peasants democratically choose a representative. This representative, along with those from the other wards, chooses a village representative and so on up through the highest levels of government. Theoretically, this allows every citizen democratic representation at all levels without the existence of political parties of any kind.

Nepal operates under a statistical system similar to that of India. Ultimate control of statistical collection and aggregation is vested in the hands of the Central Bureau of Statistics (CBS) operating at the national level and located in Kathmandu, the capital. CBS is responsible for the collection, compilation, analysis, interpretation, and publication of all statistics. In addition, and as a separate entity, an Agriculture Statistics Division operates under the Department of Food and Agricultural Marketing Services (Ministry of Food, Agriculture and Irrigation) to specifically collect agricultural statistics. The Agriculture Statistics Division is further subdivided by crop statistics, animal statistics, and methodology and statistical analysis. CBS and the Agriculture Statistics Division sometimes cooperate and at other times make independent estimates.

CBS maintains district level offices, usually staffed by three to four enumerators. District offices collect statistics down to the district level.

The Ministry of Food, Agriculture and Irrigation, the main source for agricultural statistics, provides farmers with extension services at the district level and concurrently collects agricultural statistics. Statistics are collected via crop-cutting experiments on representative fields chosen by random selection and by enquiry. Crop reporting is carried out on 10 percent of the cultivated land of each district for primary crops.

The territorial coverage of the agricultural statistics system is quite complete. Forty districts, representing 84 percent of the total cultivated land, submit statistical reports. Five of the remaining 35 districts are selected on the basis of agroclimatic data as representative for reporting and are visited on a monthly basis to monitor cereal crops for possible failures.

Crop statistics are reported in crop years, running from June 1-May 31 or in fiscal years, running from July-July. Area is reported in matomuris or hectares; production in thousand metric tons of paddy. Cropped areas are split by types of crops grown, area intercropped according to approximate proportions, and by wet and dry land. Sown area relates to gross area including bunds of terraces.

TABLE XXIV

NEPAL	Cultivated area	Rice prod'n.	Rice area	Rice yields
Year	'000' ha	paddy '000' ha	harvested '000' ha	paddy mt/ha
	1	2	3	4
1957	3885(D)	2460	1295	1.89
1958		2540	1335	1.90
1959	3894	2460	1295	1.89
1960		2040(E)	1116(E)	1.83(E)
1961	3894	2108(G)	1088	1.94
1962		2108	1099	1.92
1963		2109	1090	1.93
1964	1831	2201	1101	2.00
1965	1831	2207	1111	1.99
1966	1831	2007	1100	1.82
1967	1845	2119	1154	1.84
1968	1845	2178	1162	1.87
1969	1845	2241	1173	1.91
1970	1968	2305	1182	1.95
1971	1980	2680	1300	2.06
1972	2082	2010	1104	1.82
1973	2193	2416	1227	1.97
1974	2326	2453(J)	1240(J)	1.98(J)
1975	2300	2605	1256	2.07
1976	2310	2386	1262	1.89
1977	2326	2282	1264	1.81
1978	2319	2339	1265	1.85
1979	2319	2060	1245	1.65
1980	2330	1941	1175	1.65
1981		2560	1300	1.97
1982		1874	1150	1.63

TABLE XXIV (cont'd)

NEPAL	Area irrig.(A)	Rice imports milled	Rice exports milled	Population
Year	'000' ha	'000' mt	'000' mt	'000' persons
	5	6	7	8
1950				7914(B)
1951				8029
1952				8147
1953				8268
1954				8391
1955				8518
1956				8650
1957				8788
1958				8934
1959				9087
1960		-	150	10035(F)
1961		-	159	10176
1962		-	179	10332
1963		-	182	10500
1964		-	273	10677
1965		-	234	10862
1966		-	266	11057
1967		-	247	11262
1968		-	292	11473
1969		-	260	11692
1970		-	247	11919
1971	117	-	228	12155
1972	117	-	325	12401
1973	117	-	300	12667
1974	175	-(J)	66(J)	12952
1975	180	-	163	13257
1976	190	-	136	13580
1977	200	-	70	13913
1978	210	-	100	14256
1979	220	-	-	14608
1980	230	6	45	
1981		8	62	
1982		50	-	

TABLE XXIV (cont'd)

NEPAL	Wholesale rice price paddy Rs/mt	Retail rice price marshi rice Kathmandu Rs/mt	Domestic apparent per capita paddy availability kg/cap/yr	Cultivated ha/person
Year	11	12	14	18
1954		820(C)		.44
1955		1000		
1956		1020		
1957		1040	280	
1958		1020	284	
1959		1020	271	.43
1960		1040	203	
1961		1120	207	.38
1962		1180	204	
1963		1280	201	
1964	777(H)	1540	206	.17
1965	985	1810(I)	203	.17
1966	972	1960	182	.17
1967	1019	2150	188	.16
1968	1199	2080	190	.16
1969	1313	2360	192	.16
1970	1255	2360	193	.16
1971		2240	220	.16
1972		2740	162	.17
1973		3040	191	.17
1974		3400	189	.18
1975		3350	196	.17
1976			176	.17
1977			164	.17
1978			164	.16
1979			138	.16
1980				
1981				

Notes to Appendix Table XXIV: Nepal

A/ Area irrigated refers to total not rice area irrigated.

B/ 1950-1959: Population is as of July 1 of the year in question. Population estimates from the U.S. Bureau of the Census are about 500,000 persons higher annually than estimates published by the Central Bureau of Statistics. CBS assumes lower growth rates than the Bureau of the Census.

C/ 1954-1964: Retail price is for Kathmandu center for marshi rice taken from the 'Janachetana' Kathmandu Municipality Publication and Kathmandu Market.

D/ 1957-1977: These numbers, with the exception of 1957-1961 figures which are clear overestimates, are cultivated area figures apparently taken from the Economics and Planning Department (EAPD), Ministry of Agriculture. EAPD estimates are likely on the low side based on comparisons with Department of Forestry, Cadastral Survey, and Earth Resources Technology Satellite Imagery (ERTS) data. Actual cultivated area is probably about 2.5 million hectares.

E/ 1960-1973: January-December calendar year used. Numbers based on FAO data as the U.S. does not maintain an agricultural attaché in Nepal.

F/ 1960-1979: Population is for July 1 of the year in question. 1976-1979 are projected estimates based on the June 22, 1971 census, 1974-75 and 1976 Demographic Sample Surveys, and the 1976 Nepal Fertility Survey. Note large discrepancy between 1959 and 1960. This is due to drastic revision upward by the Bureau of the Census.

G/ 1961-1970: Although paddy production is taken from a USDA source, identical numbers appear in official Nepalese statistical sources.

H/ 1964-1970: Wholesale paddy price in crop years (June-July) probably is a farm-harvest price.

I/ 1965-1975: Retail coarse rice price is a national average price recorded in fiscal years.

J/ 1947-1981: July-June fiscal year used.

Sources of Data for Appendix Table XXIV: Nepal

1. Cultivated Area

1957-1980: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok, Thailand: United Nations). Replaces Statistical Yearbook for Asia and the Far East in 1972.

2. Rice Production

1957-1959: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok, Thailand: United Nations).

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

3. Rice Area

1957-1959: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok, Thailand: United Nations).

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

4. Rice Yields

1957-1982: Paddy yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Area Irrigated

1971-1980: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok, Thailand: United Nations).

6. Rice Imports

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

7. Rice Exports

1960-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1950-1959: U.S. Department of Commerce, Bureau of the Census, World Population 1977 (Washington, D.C.: 1978).

1960-1979: U.S. Department of Commerce, Bureau of the Census, International Population Dynamics, 1950-79 (Washington, D.C.: 1980).

11. Wholesale Rice Price

1964-1970: Nepal. National Planning Commission, Central Bureau of Statistics, Statistical Pocketbook of Nepal (Kathmandu: 1974).

12. Retail Rice Price (Main Market)

1954-1964: Economic Statistics Research Branch GM and ID Division, USAID/Nepal Economic Data Papers, Vol. 7, No. 1, March, 1965.

1965-1975: Nepal. EAPD, Agricultural Statistics of Nepal (Kathmandu: 1972). Other figures from World Bank, Nepal Agricultural Sector Review, Report No. 2205-NEP, April 27, 1979.

14. Domestic Apparent Per Capita Paddy Availability

1957-1979: Domestic per capita paddy availability is calculated by dividing paddy production (2) by population (8) on an annual basis.

Country Sources of Basic Data: Nepal

Since the systematic collection of statistics in Nepal began recently, no long-term series are currently available. Regular publication of official statistics is also a recent phenomenon. Statistical publications are not readily available in most libraries.

1. Nepal. National Planning Commission, Central Bureau of Statistics, Statistical Pocketbook of Nepal (Kathmandu: 1974, more recent years?).
2. Nepal. Central Bureau of Statistics, Monthly Statistical Bulletin (Kathmandu).
3. Nepal. Central Bureau of Statistics, Yield Data for Principal Crops (Kathmandu, annually).
4. Nepal. Central Bureau of Statistics, Foreign Trade Statistics (Kathmandu).

Useful Secondary Sources

1. Bhooshan, The Development Experience of Nepal (New Delhi: Concept Publishing Co., 1979).
2. F.A.O., Asia and the Far East Commission on Agricultural Statistics, periodic reports.

3. Centre for Economic Development and Administration, Planning for Basic Needs and Mobilization of Resources, Report of a National Seminar Held in Kathmandu (Nov. 12-14, 1979) (Bangkok: ILO, 1980).
4. Regmi, Mahesh, Landownership in Nepal (Berkeley: University of California Press, 1976).

#### Important Conversion Factors

Nepalese units of volume and land measurement, as with climate and terrain, differ markedly from the terai to the hills. Listed below are some of the more common Nepalese measures.

#### Land Measurements:

- 1 khet = 1.3 ha.
- 1 bigha = 0.67 ha (terai)
- 1 matomuri = 0.13 ha. = 0.25 ropani
- 1 ropani = 0.05 ha. (hills) = 4 muris
- 1 muri = 0.013 ha.

#### Weight and Volume Measurements:

- 1 seer = 0.80 (hills) weight
- 1 seer = 0.93 kg. (terai) weight
- 1 mana = 0.3 kg. paddy weight
- 1 maund = 37.32 kg. paddy (terai) volume

The milling rate for rice is about 60 percent.

Money Unit

money unit = rupees, pice

100 pisa = 1 Nepalese Rupee (NR)

In 1980, 1 US\$ = 12.00 rupees official exchange rate

In 1980, 1 US\$ = 14.00 rupees free-market exchange rate

XXV: PAKISTAN

Rice Statistics in Pakistan

Pakistan has a central statistical system similar to India, although agriculture is essentially treated as an independent entity. The Central Statistical Office (CSO), under the Ministry of Economic Affairs, was formally initiated in 1950 to design and oversee statistical collection throughout Pakistan. Four initial divisions, the Trade Division, the Industry and Labor Division, the Price Division, and the Social Statistics Division, were initially formed within CSO, but the organization has been revamped from time to time and additional divisions appended. However, divisions for the collection of agricultural and food statistics were not formed. Instead, this work was delegated to a special statistical division within the Ministry of Food, Agriculture and Cooperative Planning (MFACP). The MFACP is responsible for the collection, aggregation, and publication of basic land use and area, production, and yield statistics. In addition, a statistical cell within the Food Commission collects foodgrain prices at all levels of the marketing chain throughout Pakistan as well as data for government purchases of foodgrains, imports, exports, stocks, etc. Land-use statistics, represented in the table by "total area cultivated," are available in various forms since 1947/48. (Pakistan statistics are reported in years running from July 1-June 20.) A complete series for land use is not available because a few remote areas of Baluchistan and the tribal areas remain unsurveyed. However, these areas are largely uncultivated.

Rice acreage, yield, and production statistics are collected under a village-reporting system similar to that used in India. Rice acreage statistics are generally considered to be quite accurate, as most of Pakistan's crop area has been accurately surveyed. Local revenue officers (patwari, or village

headmen) maintain records on the area of each plot. The area planted to each major crop is reported by the patwari on the basis of personal inspection or enquiry. Rice yield figures, considered to be generally though consistently underreported, are derived using rather subjective methodology. Patwaris estimate yields by multiplying recorded planted acreage by an average yield factor based on past yields, eye estimates, and consultation with farmers. The result is multiplied by a seasonal condition factor derived by the patwari based on timeliness, amount of rainfall, and irrigation water available. Pakistan is beginning to use random-sample crop cutting for yields, but this technique has not yet become standard practice. Production is mathematically derived by multiplying yield by area. Individual village reports are sent in a hierarchical fashion upward where they are consolidated by the provincial agricultural departments. As in India, four estimates are made annually. The first reports on area sown, the second on late sowings and the condition of the crop, the third is a preliminary forecast of output, and the fourth reports acreage and output. Rice acreage is reported in acres while production is reported in maunds. Agricultural statistics are published in the Yearbook of Agricultural Statistics, although publication tends to be slow.

TABLE XXV

PAKISTAN	Total cultivated area '000' ha	Rice prod'n. (B) milled '000' mt	Rice area harvested (B) '000' ha	Rice yields milled (B) mt/ha	Rice area irrigated '000' ha
Year (A)	1	2	3	4	5
1947/48	14701(C)	693	791	0.88	822(D)
1948/49	15174	747	840	0.89	842
1949/50	15002	805	933	0.86	966
1950/51	15140	866	969	0.89	974
1951/52	15125	731	884	0.83	936
1952/53	15294	832	908	0.92	962
1953/54	15577	921	1016	0.91	1051
1954/55	15330	839	960	0.87	1023
1955/56	15671	841	970	0.87	991
1956/57	16023	844	972	0.87	992
1957/58	16195	876	1073	0.82	1104
1958/59	16564	992	1151	0.86	1103
1959/60	16540	995	1204	0.83	1204
1960/61	16585	1030	1182	0.87	1182
1961/62	16894	1127	1215	0.93	1215
1962/63	17191	1095	1187	0.92	1187
1963/64	17313	1192	1287	0.93	1287
1964/65	18729	1350	1357	0.99	1357
1965/66	19247	1317	1394	0.94	1394
1966/67	19263	1365	1410	0.97	1410
1967/68	19425	1499	1420	1.06	1420
1968/69	19291	2032	1556	1.31	1556
1969/70	19234	2401	1623	1.48	1623
1970/71	19210	2200	1504	1.46	1504
1971/72	19090	2262	1457	1.55	1457
1972/73	19120	2330	1480	1.57	1480
1973/74	19380	2455	1513	1.62	1513
1974/75	19550	2314	1605	1.44	1605
1975/76	19830	2617	1711	1.53	1711
1976/77	19760	2737	1749	1.56	1749
1977/78	20110	2950	1899	1.55	1899
1978/79	20110	3272	2026	1.62	2026
1979/80	20300	3216	2035	1.58	2035
1980/81		3120	1935	1.61	1935
1981/82		3430	1976	1.74	1976
1982/83		3369	1954	1.72	1954

TABLE XXV (cont'd)

PAKISTAN	Rice imports milled '000' mt	Rice exports milled '000' mt	Population midyear '000' persons	Farm-harvest price paddy Rs/mt	Procurement price milled Rs/mt
Year (A)	6	7	8	9	10
1947/48	-	-			No fix (E)
1948/49	-	-	32400(F)		No fix
1949/50	-	50	32750		255
1950/51	-	-	33240		255
1951/52	-	219	34385		281
1952/53	-	19	35195		281
1953/54	-	57	36024		308
1954/55	-	140	36872		221
1955/56	-	170	37741		No fix
1956/57	-	20	38629		No fix
1957/58	-	-	39539		429,
1958/59	-	33	40470		429(I)
1959/60	-	57	41423		402
1960/61	-	49	42399(J)		429
1961/62	-	130	46921		429
1962/63	-	136	48276		429
1963/64	-	134	49670		429
1964/65	-	184	51104		429
1965/66	-	141	52579		429
1966/67	-	179	54095		469
1967/68	-	118	55654		509
1968/69	-	127	57258		509
1969/70	-	88	58909		509
1970/71	-	182	60607		509
1971/72	-	198	62425		509
1972/73	-	789	64905		610
1973/74	-	597	66844		697
1974/75	-	470	68841		1045
1975/76	-	763	70898		2600
1976/77	-	883	73017		1171
1977/78	-	810	75199	890(M)	1329
1978/79	-	1015	77446	790	
1979/80	-	1086	79760	790	
1980/81	-	1244	82143		
1981/82	-	840	84597		
1982/83	-	1200			

TABLE XXV (cont'd)

PAKISTAN	Wholesale rice price milled main market Karachi	Retail rice price milled main market Karachi	Farm wage rate Rs/day	Domestic apparent per capita rice availability kg/cap/yr	Cultivated ha/person
Year (A)	11	12	13	14	18
1948/49					.47
1949/50		354(G)		25	.46
1950/51		354		26	.45
1951/52	331(H)	364		21	.44
1952/53	377	397		24	.43
1953/54	389	397		26	.43
1954/55	307	332		23	.41
1955/56	345	386		22	.41
1956/57	492	515		22	.41
1957/58	595	686		22	.41
1958/59	539(I)	557(I)		25	.41
1959/60	539	557		24	.40
1960/61	539	557		24	.39
1961/62	539	557		24	.36
1962/63	539	557		23	.36
1963/64	539	557		24	.35
1964/65	539	557		26	.37
1965/66	539	557		25	.37
1966/67	840	997		26	.36
1967/68	1106	1265		27	.35
1968/69	556			36	.34
1969/70	585	729(K)		41	.33
1970/71	614	847		37	.32
1971/72	591	997		37	.30
1972/73	726	1440	5.53(L)	36	.30
1973/74	1005	2047	6.48	37	.29
1974/75	1134	2260		34	.29
1975/76	1217	2420	10.09	37	.28
1976/77	1398	2980	10.64	37	.27
1977/78	1667	3520		39	.27
1978/79	1648	4000		42	.26
1979/80	1625	3690		40	.25
1980/81	5758(N)			38	
1981/82	6697			41	

Notes to Appendix Table XXV: Pakistan

Until 1971, Pakistan included both East and West Pakistan. However, a separate table is provided for East Pakistan, or Bangladesh as it is now known (Appendix Table XXII). Data presented here are for West Pakistan only.

Pakistan is administratively subdivided into provinces, provinces into divisions, and divisions into districts.

A/ Pakistani years of July 1-June 31 are used throughout.

B/ In Pakistan, rice is only produced during the kharif (summer) season under irrigated conditions.

C/ 1947/48-1979/80: Total area cultivated includes net area sown plus current fallows.

D/ 1947/48-1981/82: Almost 100 percent of the rice produced in Pakistan is grown under irrigated conditions. This is because rice is grown during the rainless, but warm summer (kharif) season. From 1947/48-1958/59, rice area irrigated refers to rice area planted. This is why irrigated area is slightly larger in some years than harvested area. From 1959/60 onwards, rice area irrigated is assumed to be the same as rice area harvested.

E/ 1947/48-1977/78: Procurement price is for kangni rice. There were no fixed prices for kangni rice in 1947/48-1948/49 and 1955/56-1956/57, although there were fixed prices for other varieties such as basmati and begmi. From 1947/48-1948/49, procurement was voluntary, but from 1949/50-1953/54 was compulsory. During years of compulsory levy, producers were required to sell all rice surplus of their own family subsistence needs to the government at the fixed (and low) procurement price. There was no

procurement made in 1955 and 1956, and procurement was voluntary from 1957.

E/ 1948/49-1980/81: Population statistics are midyear figures and refer to July 1 of the year in question.

G/ 1949/50-1967/68: Main-market retail rice price is for kangni rice.

H/ 1951/52-1979/80: Main-market wholesale rice price is for kangni F.A.Q. rice.

I/ 1958/59-1965/66: Rice price is controlled.

J/ 1960-1981: Estimates were calculated by the Statistics Division based on geometric growth rates derived by the Planning Division as follows:

1960-65 2.8874 percent growth rate

1965-70 2.8866 " " "

1970-71 3.0 " " "

1972-1981 estimates computed by the Federal Bureau of Statistics based on an intercensal growth rate of 2.988 percent growth rate. Non-Pakistanis were excluded.

K/ 1969/70-1979/80: Main-market Karachi retail rice price is for basmati-tota rice.

L/ 1972/73-1976/77: Farm wage rate is an average wage paid in the agriculture, forestry, hunting, and fishing sectors.

M/ 1977-1979: Farm-harvest price is for Punjab only.

N/ 1980/81-1981/82: Wholesale rice price is the price of basmati F.A.Q. rice in Karachi. 1981/82 is an average of July 1981-February 1982 only.

Sources of Data for Appendix Table XXV: Pakistan

1. Total Cultivated Area

1947/48-1979/80: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

2. Rice Production

1947/48-1979/80: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

1980/81-1981/82: Pakistan. Federal Bureau of Statistics, Statistics Division, Monthly Statistical Bulletin (Karachi: Manager of Publications, March 1982).

1982/83: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

3. Rice Area

1947/48-1979/80: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

1980/81-1981/82: Pakistan. Federal Bureau of Statistics, Statistics Division, Monthly Statistical Bulletin (Karachi: Manager of Publications, March 1982).

1982/83: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

4. Rice Yields

1947/48-1982/83: Rice yields are calculated by dividing rice production (2) by rice area (3) on an annual basis.

5. Rice Area Irrigated

1947/48-1958/59: Pakistan. Ministry of Agriculture and Works, Department of Agricultural Economics and Statistics, Land and Crop Statistics of Pakistan (Karachi: Government of Pakistan Press, 1962).

1959/60-1966/67: Pakistan. Ministry of Food, Agriculture and Development, Agriculture Wing, Yearbook of Agricultural Statistics (Islamabad).

1968/69-1982/83: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

6. Rice Imports

No imports made.

7. Rice Exports

1947/48-1973/74: Pakistan. Ministry of Food, Agriculture and Development, Agriculture Wing, Yearbook of Agricultural Statistics (Islamabad).

1974/75-1982/83: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1948/49-1950/51: Pakistan. Ministry of Food, Agriculture and Development, Agriculture Wing, Yearbook of Agricultural Statistics (Islamabad).

1951/52-1981/82: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

9. Farm-Harvest Price

1977-1979: Palacpac, Adelita, World Rice Statistics (Los Banos, Philippines: International Rice Research Institute, 1982).

10. Procurement Price

1947/48-1973/74: Pakistan. Ministry of Food, Agriculture and Development, Agriculture Wing, Yearbook of Agricultural Statistics (Islamabad).

1974/75-1977/78: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

11. Wholesale Rice Price (Main Market)

1951/52-1952/53: Pakistan. Central Statistical Office, 25 Years of Pakistan in Statistics (Karachi).

1953/54-1979/80: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

1980/80-1981/82: Pakistan. Statistics Division, Monthly Statistical Bulletin (Karachi: Manager of Publications).

12. Retail Rice Price (Main Market)

1949/50-1979/80: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

13. Farm Wage Rate

1972/73-1976/77: Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).

14. Domestic Apparent Per Capita Rice Availability

1948/49-1981/82: Rice availability is calculated by dividing rice production (3) by population (8) on an annual basis.

Country Sources of Basic Data: Pakistan

1. Pakistan. Statistics Division, Pakistan Statistical Yearbook (Karachi: Manager of Publications).
2. Pakistan. Federal Bureau of Statistics, Statistics Division, Monthly Statistical Bulletin (Karachi: 1952-).
3. West Pakistan. Bureau of Statistics, Planning and Development Department, Statistical Handbook of West Pakistan (Lahore: 1963-1968).
4. Pakistan. Ministry of Finance, Planning and Provincial Coordination, Statistics Division, Statistical Pocketbook of Pakistan (Karachi: Manager of Publications).
5. Pakistan. Central Statistical Office, 25 Years of Pakistan in Statistics (Karachi: 1972).
6. Pakistan. Department of Marketing, Intelligence and Agricultural Statistics, Weather and Crop Report (Karachi: Manager, Gov't of Pakistan Press).
7. Rab, Abdur, Acreage, Production and Prices of Major Agricultural Crops of West Pakistan (Punjab): 1931-59, Statistical Papers No. 1 (Karachi: Institute of Development Economics, June 1961).
8. Pakistan. Ministry of Agriculture and Works, Department of Agricultural Economics and Statistics, Land and Crop Statistics of Pakistan (Karachi: Gov't of Pakistan Press, 1962).
9. Pakistan. Ministry of Food, Agriculture and Development, Agriculture Wing, Yearbook of Agricultural Statistics (Islamabad).

Useful Secondary Sources

1. Khan, Mahmood Hasan, The Role of Agriculture in Economic Development: A Case Study of Pakistan (Wageningen: Centre for Agricultural Publications and Documentation, 1966).
2. Nazeer, Mian Mohammad, Rice Economy of Pakistan (1962).
3. Nutly, Leslie, The Green Revolution in West Pakistan: Implications of Technological Change (New York: Praeger Publishers, 1972).
4. Hufbauer, G. C., "Cereal Consumption, Production and Prices in West Pakistan," Pakistan Development Review, VII, 2 (1968), pp. 292-93.
5. Falcon, Walter P., "The Reliability of Punjab Agricultural Data," in Abdur Rab, ed., Acreage, Production and Prices of Major Agricultural Crops of West Pakistan (Punjab), 1931-1959 (Karachi: Pakistan Institute of Development Economics, 1961), pp. 3-9.

Important Conversion Factors

1 mt. = 26.792 maunds	1 <u>lac</u> = 100,000
1 maund = 82.29 lbs. = .0373 mt.	1 <u>crore</u> = 10 million
1 maund = 40 seers	
1 seer = 2.057 lbs. = .933 kg.	
1 mt. = 1071.811 seers	
1 long ton = 1.01605 mt. = 2,250 lbs.	

Pakistan statistical year runs from July 1-June 30.

Glossary

basmati - Fragrant, high quality rice grown under irrigated conditions in the Punjab. This rice commands a premium price.

patwari - Village officials who are responsible for many local-level statistical tasks.

kharif - Summer season during which rice is grown under irrigated conditions in Pakistan.

rabi - Winter season during which cool-weather crops such as wheat are grown in Pakistan.

Money Unit

money unit - rupee

In 1980, 1 US\$ = 9.90 rupees official exchange rate

In 1980, 1 US\$ = 10.95 rupees free-market exchange rate

XXVI: SRI LANKA

Rice Statistics in Sri Lanka

Pre-war rice statistics in Sri Lanka are very poor in quality or non-existent. This is largely because of the British emphasis on plantation export crops at the expense of paddy production. Until the maha 1947/48 season there is no continuous yearly series. Periodic agricultural census figures and independent estimates prepared by ministries provide us with benchmark figures, but do not relate to one another and can only be considered to be very rough estimates. The 1946 Census of Agriculture marks the beginning of data collection based on plotwise enumeration, and during the maha 1947/48 season, the Department of Census and Statistics began the regular collection of paddy area and yield statistics using village headmen and Divisional Revenue Officers (DRO) as data collectors. Although these early statistics were based on eye estimates only, they set a precedent for future, improved data collection procedures. Rice yield statistics, in particular, were found to be underreported. Prior to 1949, most village headmen routinely reported paddy yields of 14 bushels/acre (0.72 mt./ha.). In 1949, the Department of Agriculture ran crop-cutting experiments that showed mean yields of 27 bushels/acre (1.39 mt./ha.).

At present, the Sri Lankan statistical system is organized around a sole body, the Department of Census and Statistics, within the Ministry of Planning and Economic Affairs, which is responsible for the collection of all statistics as well as periodic censuses (including agricultural censuses). Key paddy statistics, including sown and harvested area by maha and yala seasons, asweddumized area, paddy yield and production, area irrigated subdivided by major and minor irrigation schemes and rainfed area, area under different cultivation practices, and spoiled area, are regularly collected down to the

village level. (Asweddumized area, a special category in Sri Lanka, refers to paddy area that is potentially cultivable; sown area to area that is physically planted; and harvested area to area harvested.) Paddy statistics are promptly published in the Annual Statistical Abstract of Sri Lanka and in various Central Bank of Ceylon reports. Although the Department of Census and Statistics is responsible for the sampling design, the selection of sample units, and the amalgamation of results, actual work at the local level is carried out by extension agents and other field officers within the district administration. Paddy statistics are recorded in split crop years where the maha season begins in one year and finishes in the following year. The yala season for the following year is counted as part of the preceding maha season. For example, the 1980/81 season refers to maha 1980/81 and yala 1981.

In Sri Lanka, as in India, paddy yields are used to mathematically calculate paddy production. Yields are obtained from crop estimation surveys using multi-stage random sampling with the DRO divisions as strata. Within DRO, where sufficient acreage exists, the strata are substratified by type of irrigation scheme--major, minor, and rainfed. Major schemes are defined as irrigation works controlled and maintained under the authority of the Department of Irrigation with government funds. Minor schemes include all other irrigation schemes such as irrigation tanks. Rainfed refers to area naturally fed by direct rain, seepage, or marshy water. In each stratum, villages are selected with a probability proportional to the area under paddy. Each maha season (main), about 4,000 villages are selected, and each yala season about 2,500 are selected. Within each village, two parcels (liyadde) of paddy land are chosen in which a standard 33 ft. by 16 1/2 ft. plot is randomly mapped

out. The grain from these plots is harvested, threshed, winnowed, and weighed to obtain an average yield per harvested area. Yields are reported in bushels (46 lbs.) of paddy per acre.

Paddy production is calculated as the product of area harvested and yield data. The reported area harvested is taken as a gross area, and an island-wide correction factor is applied to obtain net area harvested. Net area is assumed to be 85 percent of gross area. It is accepted that about 15 percent of area harvested is actually devoted to non-productive purposes such as bunds, ridges, walkways, etc. The application of a blanket 15 percent loss to harvested area has been criticized, and the Department of Census and Statistics is presently working on developing district-specific correction factors. However, any bias that may be present will at least be consistent through time. Production is reported in bushels of paddy.

Paddy area is collected each season on a parcel basis by DRO statistical staff. (A parcel is defined as a piece of land cultivated by one or more persons and surrounded by land not under paddy or cultivated by other persons.) Ancillary information, such as crop damage, cultivation practices used, and asweddumized area, are also collected. Paddy area figures are supplied by the cultivators and are adjusted based on sown seed rates per acre. Sri Lanka has not been completely cadastrally surveyed so no accurate area figures exist. Rice area figures are reported in acres and are available for asweddumized, sown, and harvested areas.

TABLE XXVIa

SRI LANKA	Area under cultivation '000' ha	Rice prod'n. (A) paddy '000' mt	Rice area sown (A) '000' ha	Rice yields (A) paddy mt/ha	Rice area irrig. (A) '000' ha
Year	1	2	3	4	5
1911/12	1106				
1912/13			324		
1913/14					
1914/15					
1915/16					
1916/17					
1917/18					
1918/19					
1919/20					
1920/21		219(D)	306(D)	0.72(D)	
1921/22	1146	223	317(E)	0.70	
1922/23		235	323	0.73	
1923/24		217	301	0.72	
1924/25		254	324	0.78	
1925/26		249	324	0.77	
1926/27		254	338	0.75	
1927/28		263	338	0.78	
1928/29		257	338	0.76	
1929/30		309	324(F)	0.95	
1930/31		306	320	0.96	
1931/32	1342	306	344(G)	0.89	
1932/33		306	340	0.90	
1933/34		306	340	0.90	
1934/35		306	340	0.90	
1935/36		306	340	0.90	
1936/37		306	340	0.90	
1937/38		306	340	0.90	219
1938/39		306	340	0.90	
1939/40		306	340	0.90	

TABLE XXVIa (cont'd)

SRI LANKA	Rice imports (B) milled '000' mt	Population '000' persons	Domestic apparent per capita paddy availability kg/cap/yr
Year	6	8	14
1911/12	374	4110	
1912/13	380		
1913/14	400		
1914/15	394		
1915/16	383		
1916/17	435		
1917/18	420		
1918/19	347		
1919/20	296		
1920/21	309		
1921/22	328	4505	49
1922/23	387		
1923/24	401		
1924/25	399		
1925/26	441		
1926/27	468		
1927/28	478		
1928/29	496		
1929/30	500		
1930/31	483		
1931/32	455		
1932/33	463	5389(H)	57
1933/34	454	5419	56
1934/35	493	5560	55
1935/36	558	5608	55
1936/37	536	5642	54
1937/38	527	5725	53
1938/39	531(I)	5826	53
1939/40	593	5916	52

TABLE XXVib

SRI LANKA	Arable area '000' ha	Rice prod'n. paddy (A) '000' mt	Rice area sown (A) '000' ha	Rice yields paddy (A) mt/ha	Rice area irrig. (A) '000' ha
Year	1	2	3	4	5
1943/44		428(J)			
1944/45		342			
1945/46		359	347(K)	1.03(L)	
1946/47	1419	348	364(M)	0.96	231
1947/48		390	370	1.05	
1948/49		482	364(N)	1.32	
1949/50		459	432	1.06	183(Q)
1950/51		603	435	1.39	193
1951/52		457	471	0.97	238
1952/53		649	425	1.53	196
1953/54		745	507	1.47	265
1954/55	1473	574	545	1.05	292
1955/56		653	487	1.34	222
1956/57		763	489	1.56	254
1957/58		759	560	1.36	309
1958/59		897	539	1.66	291
1959/60		897	595	1.51	338
1960/61	1538	899	596	1.51	349
1961/62	1538	1002	622	1.61	368
1962/63	1625(U)	1026	633	1.62	378
1963/64	1535	1054	642	1.64	381
1964/65	1873	757	589	1.29	342
1965/66	1876	954	655	1.46	398
1966/67	1875	1145	664	1.72	390
1967/68	1875	1348	706	1.91	413
1968/69	1980	1375	692	1.99	404
1969/70	1980	1617	760	2.13	465
1970/71	1979	1395	726	1.92	345(V)
1971/72	1979	1312	727	1.80	352
1972/73	1979	1312	726	1.81	378
1973/74	1979	1602	825	1.94	446
1974/75	1979	1154	696	1.66	370
1975/76	2109	1252	725	1.73	403
1976/77	2109	1677	829	2.02	487
1977/78	2131	1890	876	2.16	536
1978/79	2145	1917	839	2.27	523
1979/80	2141	2133	845	2.51	525
1980/81	2147	2230	877	2.54	
1981/82		2156	815	2.55	

TABLE XXVIb (cont'd)

SRI LANKA	Rice imports (B) milled '000' mt	Rice exports (B/C) milled '000' mt	Population midyear '000' persons	Farm-harvest price (B) paddy Rs/mt
Year	6	7	8	9
1940/41	559		5972	
1941/42	556		6044	
1942/43	239		6044	
1943/44	141		6161	
1944/45	114		6308	
1945/46	182		6516	
1946/47	258		6719	
1947/48	262		6903	
1948/49	416		7109	
1949/50	403	-	7321	
1950/51	498	-	7544	
1951/52	401	-	7876	
1952/53	406	-	8074	
1953/54	410	-	8290	677(T)
1954/55	402	-	8520	558
1955/56	382	-	8723	543
1956/57	491	-	8929	548
1957/58	523	-	9165	542
1958/59	482	-	9388	551
1959/60	584	-	9625	553
1960/61	528	-	9896	553
1961/62	469	-	10168	547
1962/63	411	-	10443	532
1963/64	403	-	10646	510
1964/65	658	-	10903	508
1965/66	280	-	11164	539
1966/67	693	-	11439	530
1967/68	355	-	11703	655
1968/69	370	-	11992	735
1969/70	309	-	12252	729
1970/71	480	-	12514	710
1971/72	294	-	12608	693
1972/73	299	-	12861	711
1973/74	340	-	13091	710
1974/75	298	-	13284	1280
1975/76	465	-	13496	2136
1976/77	377	-	13717	2006
1977/78	537	-	13942	1792
1978/79	186	9	14190	1965(W)
1979/80	211	-	14471(X)	2013
1980/81	168	-	14738	
1981/82	153	-		
1982/83	156	-		

TABLE XXVib (cont'd)

SRI LANKA	Procurement price (B) paddy Rs/mt	Wholesale rice price (B) milled main market Rs/mt	Retail rice price (B) milled main market Rs/mt	Farm wage rate (B) Rs/day
Year	10	11	12	13
1948	384(O)			1.48(P)
1949	384		1293(R)	1.55
1950	384	475(S)	1212	1.79
1951	431	427	1180	2.18
1952	575	447	1390	2.20
1953	575	1664	1794	2.23
1954	575	1276	1390	2.27
1955	575	1119	1261	2.35
1956	575	1095	1196	2.35
1957	575	1066	1261	2.38
1958	575	1028	1293	2.42
1959	575	1027	1309	2.42
1960	575	973	1244	2.40
1961	575	1018	1277	2.41
1962	575	1091	1309	2.44
1963	575	1082	1325	2.47
1964	575	1227	1374	2.52
1965	575	1325	1341	2.55
1966	575	1321	1277	2.55
1967	670	1586	1762	2.58
1968	670	1586	1891	2.96
1969	670	1685	1923	3.01
1970	670	1632	1907	3.05
1971	670		1858	3.10
1972	670	2180	2133	3.50
1973	861	1055	2956	3.77
1974	1579	1263	5000	4.73
1975	1579		3593	4.24
1976	1579		3297	4.29
1977	1579		3176	
1978	1914		3516	
1979	1914	2031(Y)	3835	14.27(Z)
1980	2393	2428	4710	20.00(AA)
1981	2751(BB)		6250	27.78
1982	2751		6560	30.66

TABLE XXVib (cont'd)

SRI LANKA Year	Domestic apparent per capita paddy availability kg/cap/yr	Main rice crop area (A) cultivated Maha '000' ha	Main rice crop prod'n. (A) Maha paddy '000' mt	Main rice crop yield (A) Maha paddy mt/ha	Arable ha/person
	14	15	16	17	18
1943	69		288		
1944	54		250		
1945	55		248		
1946	52		238		.21
1947	56		252		
1948	68		286		
1949	63	272	298	1.10	
1950	80	258	259	1.00	
1951	58	299	384	1.28	
1952	80	265	275	1.04	
1953	90	312	403	1.29	
1954	67	334	453	1.36	.17
1955	75	340	405	1.19	
1956	85	316	421	1.33	
1957	83	340	442	1.30	
1958	96	343	457	1.33	
1959	93	373	549	1.47	
1960	91	378	565	1.49	.16
1961	99	388	630	1.62	.15
1962	98	405	659	1.63	.15
1963	99	411	670	1.63	.14
1964	69	399	670	1.68	.17
1965	85	425	640	1.51	.17
1966	100	427	728	1.70	.16
1967	115	465	907	1.95	.16
1968	115	479	980	2.05	.16
1969	132	483	1032	2.14	.16
1970	111	465	867	1.86	.16
1971	104	480	883	1.84	.16
1972	102	477	876	1.84	.15
1973	122	534	1098	2.06	.15
1974	87	444	719	1.62	.15
1975	93	465	882	1.90	.16
1976	122	538	1144	2.13	.15
1977	136	576	1286	2.23	.15
1978	135	579	1393	2.41	.15
1979	147	555	1637	2.95	.15
1980	151	574	1453	2.53	.15
1981		597	1523	2.55	
1982		568	1363	2.40	

Notes to Appendix Tables XXVIa and XXVIb: Sri Lanka

Administratively and for statistical purposes, Sri Lanka is subdivided into 22 districts called Assistant Government Agency Divisions (formerly Divisional Revenue Officers Divisions). The districts are further subdivided into village groupings called Grama Sevaka Divisions. For statistical purposes, the Grama Sevaka Division is the smallest divisible unit.

A/ Rice area planted, yield, production, and irrigated area are recorded in crop years whereas the maha crop begins in one year and finishes in the following year, and the yala crop is also from the following year. For example, rice production for 1974 refers to rice output for the 1974/75 maha season and the 1975 yala season.

B/ On a calendar-year basis.

C/ No rice exports made from Sri Lanka except in 1978.

D/ 1920-1939: The rice area, yield, and production figures presented here are rough estimates only. Unfortunately, no regular collection of paddy statistics was carried out by the British because of their interest in plantation crops--tea, rubber, and coconuts--at the expense of food crops. Rice area numbers refer to total asweddumized acreage. (Asweddumized land is usually defined as the total physical extent of land cultivable with paddy each season.) Asweddumized land refers to cultivable not sown rice area.

E/ 1921: Rice area estimate is from the 1921 Census of Agriculture.

F/ 1929: Rice area estimate is based on the 1929 partial Census of Agriculture.

G/ 1931: Rice area estimate is a Department of Agriculture estimate.

H/ 1932-1980: Population figures are midyear estimates.

I/ 1938-1982: Rice import figures are from the Customs Returns. The Paddy Marketing Board, Food Commissioner, also produces a rice import series. The Food Commissioner's series indicates generally larger imports, although why this is so is not clear. Rice imports are comprised of all forms of rice, including broken rice.

J/ 1943/44-1981/82: Paddy production is estimated by the Department of Census and Statistics by multiplying the net area harvested by the yield per area harvested.

K/ 1945: Rice area estimate prepared by the Department of Commerce and Industry.

L/ 1945-1981: Rice yields are artificially depressed in this table because of the use of sown area in calculated yields. As mentioned in Footnote J, harvested area is used by the Department of Census and Statistics in calculating production.

M/ 1946: Rice area estimate is from the 1946 Census of Agriculture and excludes paddy area within estates. This census marked the first plot-wise enumeration.

N/ 1948: In the 1947/48 maha season, the Department of Census and Statistics initiated data collection (rice yields and area) at the local level through village headmen and Divisional Revenue Officers. However, estimates were still considered to be rough as subjective eye estimation only was used.

O/ 1948-1982: The procurement price is the government guaranteed price for paddy. In 1948, the government introduced the Guaranteed Price Scheme (GPS). The plan, which offered a guaranteed price to producers for paddy, was implemented with the hope that the substantial subsidy built into the GPS would encourage farmers to increase output. The scheme was carried out at the village level through cooperatives that were charged with the buying and storage of paddy. Initially, the guaranteed price was set at 12 Rs/bushel (575 Rs/mt.), a price well above prevailing free-market prices. During this period (1950-1966), a large portion of marketed paddy was bought up through the GPS. Later, the guaranteed price briefly dropped below free-market prices. However, since then, the government has been careful to maintain the guaranteed price at a level slightly above prevailing free-market prices.

P/ 1948-1976: Farm wage rate is for males only and applies to tea growing including special allowances.

Q/ 1949/50-1979/80: Rice area irrigated refers to all area planted under major and minor irrigation schemes for the maha and yaia seasons.

R/ 1949-1979: Main-market Colombo retail rice price is for raw local rice.

S/ 1950-1974: Main-market wholesale rice price is for raw local rice.

T/ 1953-1979: Farm-harvest price is the simple average market price of paddy in various districts throughout Sri Lanka.

U/ 1962: Cultivated area refers to distribution of area under crops within agricultural holdings, including asweddumized paddy lands, temporary crops, grassland, plantation crops, and other crops as collected in the 1962 Census of Agriculture.

V/ 1970-1977: Apparently, different data were used by the two sources.

W/ 1978-1979: Farm-harvest price is an average producer price for paddy for Sri Lanka's 22 districts.

X/ 1979-1980: Provisional.

Y/ 1979-1980: The wholesale rice price is in paddy form.

Z/ 1979: Farm wage rate is the average daily male wage rate for transplanting between January and June. Wages on tea plantations are considerably lower. For instance, for the same time period, the average daily male wage rate for weeding tea plants (the best paid job) was only 13.70 Rs. Additional wage rates for hired labor for paddy cultivation are provided in a study of the Minipe Colonization scheme by N. Amerasinghe (N. D. Abdul Hameed et al., Rice Revolution in Sri Lanka (Geneva: United Nations Research Institute for Social Development, 1977), p. 105. The wage rates were as follows: in 1960, men received 2 Rs/day with meals, 2.5 Rs/day without meals; in 1966, 2.5 Rs/day with meals, 3 Rs/day without meals; and in 1971, 3.5 Rs/day with meals, 4.5 Rs/day without meals. In Sri Lanka, casual laborers generally receive meals in addition to a cash wage.

aa/ 1980-1982: An average daily wage rate for male paddy workers.

bb/ 1981: The guaranteed price of paddy was raised to 52.5 Rs/bushel in February 1981. It was subsequently raised again to 57.5 Rs/bushel in September 1981. This is the September price.

Sources of Data for Appendix Tables XXVIa and b: Sri Lanka

1. Area Under Cultivation

1911-1946: Ceylon. Department of Census and Statistics, Census of Agriculture, 1952, Part IV - Agriculture (Colombo: Government Press, 1956).

1962: Ceylon. Department of Census and Statistics, Census of Agriculture, 1962, Vol. II, Land Utilization (Colombo: Government Press, 1966).

1960-1980: Economic and Social Commission for Asia and the Pacific, Statistical Yearbook for Asia and the Pacific (Bangkok: United Nations).

2. Rice Production

1920-1939: Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford: Food Research Institute, Stanford University, 1941).

1943/44-1972/73: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo: Department of Government Printing).

1973/74-1981/82: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1981 and 1982).

3. Rice Area

1912, 1922: Ceylon. Department of Census and Statistics, Census of Agriculture, 1962, Vol. III, Asweddumized Paddy Lands (Colombo: Government Press, 1966).

1920-1939: Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford: Food Research Institute, Stanford University, 1941).

1921, 1926, 1929, 1931, 1945, 1946, 1948: Ceylon. Department of Census and Statistics, A Report on Paddy Statistics, Monograph No. 9, 1956.

1947: Jones, Gavin W. and Selvaratnam, S., Population Growth and Economic Development in Ceylon (Colombo: Hansa Publishers Limited in Association with Marga Institute, 1972).

1949/50-1972/73: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Republic of Sri Lanka (Colombo: Department of Government Printing).

1973/74-1981/82: Sri Lanka. Central Bank of Ceylon. Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1982).

#### 4. Rice Yields

1920-1981/82: Rice yields are calculated by dividing rice production (2) by rice area cultivated (3) on an annual basis.

#### 5. Rice Area Irrigated

1937-1946: Bansil, P. C., Ceylon Agriculture, A Perspective (Delhi: Dhanpat Rai and Sons, 1971).

1949/50-1969-70: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Republic of Sri Lanka (Colombo: Department of Government Printing).

1970/71-1977/78: Sri Lanka. Central Bank of Ceylon, Statistics Department, Economic and Social Statistics of Sri Lanka, Vol. 2, No. 1, June, 1979.

1978/79-1979/80: Sri Lanka. Ministry of Agricultural Development and Research, Agricultural Statistics of Sri Lanka 1951/52-1980/81 (Colombo: 1981).

#### 6. Rice Imports

1911-1937: Wickizer, V. D. and Bennett, M. K., The Rice Economy of Monsoon Asia (Stanford: Food Research Institute, Stanford University, 1941).

1938-1968: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo: Department of Government Printing).

1969-1975: Sri Lanka. Agricultural Statistical Unit, Division of Agricultural Economics, Agricultural Statistical Information, Agricultural Economics Publication, No. 4 (Peradeniya: Department of Agriculture, 1976).

1976-1978: Sri Lanka. Ministry of Agricultural Development and Research, Agricultural Statistics of Sri Lanka 1951/52-1980/81 (Colombo: 1981).

1979-1982: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1982).

7. Rice Exports

1949-1982: U.S. Foreign Agricultural Service, Foreign Agriculture Circular, FG-26-83 (Washington, D.C.: 1983).

8. Population

1911 and 1921: Ceylon. Department of Census and Statistics, Census of Agriculture, 1952, Part IV - Agriculture (Colombo: Government Press, 1956).

1932-1975: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Republic of Sri Lanka (Colombo: Department of Government Printing).

1976-1980: Sri Lanka. Ministry of Agricultural Development and Research, Agricultural Statistics of Sri Lanka 1951/52-1980/81 (Colombo: 1981).

9. Farm-Harvest Price

1953-1977: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo: Department of Government Printing).

1978-1979: Sri Lanka. Department of Census and Statistics, Ministry of Plan Implementation, Bulletin of Selected Retail Prices, 1978-1980 (Colombo: 1980).

10. Procurement Price

1948-1949: Bansil, P. C., Ceylon Agriculture, A Perspective (Delhi: Dhanpat Rai and Sons, 1971).

1950-1971: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo: Department of Government Printing).

1972: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Review of the Economy (Colombo: C. L. Senanayake, 1980).

1973-1982: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1981 and 1982).

11. Wholesale Rice Price (Main Market)

1950-1974: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo: Department of Government Printing).

1979-1980: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Review of the Economy (Colombo: C. L. Senanayake, 1980).

12. Retail Rice Price (Main Market)

1949-1976: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo:

Department of Government Printing).

1977-1979: Sri Lanka. Department of Census and Statistics, Ministry of Plan Implementation, Bulletin of Selected Retail Prices, 1978-1980 (Colombo: 1980).

1980-1982: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: C. L. Senanayake, 1982).

13. Farm Wage Rate

1948-1976: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Socialist Republic of Sri Lanka (Colombo: Department of Government Printing).

1979: Sri Lanka. Central Bank of Ceylon, Statistics Department, Economic and Social Statistics of Sri Lanka, Vol. 2, No. 1, June, 1979.

1980-1982: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: C. L. Senanayake, 1982).

14. Domestic Apparent Per Capita Paddy Availability

1932-1980: Domestic per capita paddy availability is calculated by dividing paddy production (2) by population (8) on an annual basis.

15. Main Rice Crop Area - Maha

1949-1975: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Republic of Sri Lanka (Colombo: Department of Government Printing).

1976-1978: Sri Lanka. Central Bank of Ceylon, Statistics Department, Economic and Social Statistics of Sri Lanka, Vol. 2, No. 1, June, 1979.

1979-1980: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Review of the Economy (Colombo: C. L. Senanayake, 1981).

1981-1982: Sri Lanka: Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1982).

16. Main Rice Crop Production - Maha

1943-1975: Sri Lanka. Department of Census and Statistics, Statistical Abstract of the Democratic Republic of Sri Lanka (Colombo: C. L. Senanayake, 1980).

1976-1978: Sri Lanka. Central Bank of Ceylon, Statistics Department, Economic and Social Statistics, Vol. 2, No. 1, June, 1979.

1979-1980: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Review of the Economy (Colombo: C. L. Senanayake, 1980).

1981-1982: Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1982).

17. Main Rice Crop Yield

1949-1982: Main rice crop yields are calculated by dividing maha production (16) by maha area (15) on an annual basis.

Country Sources of Basic Data: Sri Lanka<sup>\*</sup>

1. Sri Lanka. Department of Census and Statistics, Statistical Abstract of Sri Lanka (Colombo: Department of Government Printing, 1954- ).
2. Ceylon. Department of Census and Statistics, Quarterly Bulletin of Statistics (Colombo: Government Publications Bureau, 1955- ).
3. Sri Lanka. Department of Census and Statistics, Sri Lanka Yearbook (Colombo: Department of Government Printing).
4. Sri Lanka. Central Bank of Ceylon, Statistics Department, Economic and Social Statistics of Sri Lanka (Colombo).

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\* Under the British, Sri Lanka was referred to as Ceylon.

5. Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Annual Report (Colombo: W.R.B.K. Godakumbura, 1982).
6. Sri Lanka. Central Bank of Ceylon, Central Bank of Ceylon Review of the Economy (Colombo: C. L. Senanayke, 1980).
7. Ceylon. Department of Census and Statistics, "A Report on Paddy Statistics," Monograph No. 9 (1956).
8. Sri Lanka. Department of Agriculture, Agricultural Statistical Unit, Agricultural Statistical Information, Agricultural Economics Publication No. 4 (1976).
9. Ceylon. Department of Census and Statistics, Ceylon, Census of Agriculture, 1952 (Colombo: Government Press, 1956).
10. Ceylon. Department of Census and Statistics, Census of Agriculture, 1962 (Colombo: Government Press, 1965).

#### Useful Secondary Sources

1. Endirisinghe, Neville and Poleman, Thomas, "Implications of Government Intervention in the Rice Economy of Sri Lanka," Cornell International Agriculture Mimeograph No. 48 (Ithaca, N.Y.: 1976).
2. DeSilva, K. M., A History of Sri Lanka (Berkeley: University of California Press, 1981).
3. Bansil, P. C., Ceylon Agriculture, A Perspective (Delhi: Dhanpat Rai and Sons, 1971).
4. Ranasinghe, W.; Mileham, S.M.K.; and Gunatunga, C., A Bibliography of Socio-Economic Studies in the Agrarian Sector of Sri Lanka (Colombo: Agrarian Research and Training Institute, 1977).
5. Ceylon. Ministry of Finance, Economic and Social Development of Ceylon 1926-1950, A Survey (Colombo: Government Press, 1951).

6. Attanayake, D. C., "Changing Patterns of Rice Production in Ceylon, 1945-1964," M.A. thesis, University of Wisconsin, 1969.
7. Chambers, Robert, "Water Management and Paddy Production in the Dry Zone of Sri Lanka," Occasional Publication No. 8 (Colombo: Agrarian Research and Training Institute, 1975).
8. Ceylon. Department of Agriculture, The Tropical Agriculturist (various issues).

Important Conversion Factors

1 cwt. rice = .050802 mt. rice

1 mt. rice = 19.68246 cwt.

1 bushel paddy (volume) = 46 lbs. = 0.2086 mt. paddy

1 bushel paddy = 0.48 bushels of rice

1 bushel paddy = 14 kg. of rice

1 bushel paddy = 20.9 kg. paddy

1 bushel rice = 64 lbs. rice = 29.0299 kg. rice

1 bushel rice = 2.0853 bushels of paddy

1 bushel rice = 32 measures of rice

1 mt. paddy = 47.938638 bushels (volume) paddy

1 measure milled rice (volume) = 0.91 kg.

1 kg. rice = 1.1023 measures rice

1 acre = .405 ha.

1 long ton = 2240 lbs. = 1.01605 mt.

Paddy to rice milling rate: 68 percent

Glossary of Sri Lankan Terms With Reference to Rice

Asweddumized land - refers to the total physical extent of land that is cultivable with paddy each season.

Chena - is used to refer to upland or highland cultivation.

Liyadde - are the smallest paddy field units and refer to banded paddy area.

This unit is used as the basis for the collection of paddy statistics.

Maha (munmari or kalapokam) - refers to the main growing season during which the bulk of Sri Lanka's rice crop is produced. The maha season is dependent on the northeast monsoon. Rice is commonly sown between July and November and harvested between February and May of the following year.

Yala (pirnari or sirupokam) - refers to the secondary rice growing season, accounting for only about 25 percent of Sri Lanka's total rice output. The yala rice crop, dependent on the southwest monsoon, is commonly sown between February and June and is harvested between July and October.

#### Money Unit

money unit - Sri Lankan rupee

In 1980, 1 US\$ = 18.00 rupees official exchange rate

In 1980, 1 US\$ = 18.67 rupees free-market exchange rate