

CEREAL CONSUMPTION PATTERNS*1

BY

C. T. ARAGON**
and
L. B. DARRAH***

INTRODUCTION

Cereal and cereal products represent the major group of foods used by Filipinos. Data released by the National Economic Council (NEC) for 1968 show an average consumption of 125.9 kgs. of cereals/person². This total consisted of 87 kilos of rice, 24.4 kgs. of corn, 14.2 kgs. of wheat flour and 0.3 kg. of other cereals.

With cereals representing such an important food item, any shortage in supplies creates national concern. The year 1971 has been a critical one in this respect. Even with the so-called Green Revolution, cereals have been in short supply. Although earlier in the year the supply was reportedly adequate — just maldistribution problems — it soon became apparent that a real shortage existed. As a result of the shortage and the sharply rising prices, the country resorted to the importation of large quantities of rice.

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**C. (Corazon) Tamolang-Aragon, B.S.A., M.S. (candidate), is Instructor, Department of Agricultural Economics, UPCA.

***Refer to p. 27.

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²"The Statistical Reporter," National Economic Council, Vol. XIII, No. 4, October-November, 1969.

The entire situation raises a number of critical questions. Some of them are: How accurate are production estimates? Are the necessary data available with which to project requirements of consumers? What is the impact of rising or changing incomes on consumption? Do high-income consumers use substantially less rice than lower-income ones? Do high-income consumers shift away from cereals or do they use more of all cereal foods? And during period of sharp price increases, do consumers shift from one cereal to another, as from corn to rice?

THE STUDY

It is not the intent of this study to examine the accuracy of production estimates, although it may well be a worthy undertaking. On the other hand, this study has as its primary objective an analysis of the consumption patterns for cereal foods – especially as they are related to incomes – and further, to determine the income elasticity of demand for the different cereal products.

The results are based on two surveys of consumers. The first survey included 1,003 families and was made during the October-November period of 1970; the second one included 1,007 families and was made during the May-June period of 1971. Data obtained during the surveys included selected characteristics of the families and food usage for the seven days prior to the enumeration of respondents. The respondents were chosen on the basis of a random sample stratified by region, subregion and jurisdictional unit (cities and municipalities).

Economic conditions changed considerably during the interval between the two surveys. This is indicated by the price data shown below:

	<u>Macan</u>	<u>rice,</u>	<u>₱/ganta</u>	<u>Milled corn,</u>	<u>₱/ganta</u>	
	<u>November</u>	<u>June</u>	<u>Percent</u>	<u>November</u>	<u>June</u>	
	<u>1970</u>	<u>1971</u>	<u>increase</u>	<u>1970</u>	<u>1971</u>	
Manila	2.27	2.63	15.9	1.28	1.99	55.5
Cebu	2.18	2.60	14.3	1.30	1.61	23.8
Davao	2.12	2.64	24.5	1.42	1.87	31.7

For analysis purpose, the families were divided into four groups according to per capita income as follows:

- Less than ₱400 per capita,
- ₱400 to ₱799 per capita,
- ₱800 to ₱1,499 per capita, and
- ₱1,500 and over per capita.

The consumption data are expressed in terms of weekly use per 1,000 persons. This gives a "rate of use" and makes the data for each of the income groups directly comparable.

CHARACTERISTICS OF FAMILIES

The 1,003 families included in the October-November 1970 survey had an average of 7.1 persons/family, an average of ₱6,882 of income/family and an average of ₱964 of income per capita (table 1-A). The lowest income group had 7.6 persons/family and an average per capita income of ₱232. The second income group had 7 persons/family and ₱564 of income per capita; the third income group had the same size of family but the per capita income was ₱1,275. The highest income group had 6.6 persons/family and a per capita income of ₱2,638.

TABLE 1-A. SELECTED CHARACTERISTICS OF FAMILIES SURVEYED, 1,003 FAMILIES, PHILIPPINES, OCTOBER-NOVEMBER 1970

ITEM	Per capita income group				TOTAL OR AVERAGE
	Less than ₱400	₱400-799	₱800-1,499	₱1,500 and over	
Number of families	304	311	193	195	1,003
Number of persons	2,317	2,173	1,359	1,292	7,141
Average size of family	7.6	7	7	6.6	7.1
Average family income	₱1,766	₱3,938	₱8,990	₱17,479	₱6,882
Average per capita income	₱ 232	₱ 564	₱1,275	₱ 2,638	₱ 964

The May-June survey of 1,007 families showed an average family size of 7.2 persons, an average family income of ₱7,551 and an average income per capita of ₱1,050 (table 1-B). The difference of ₱86 in per capita income may be due to sampling differences, general inflation, or most likely, both factors. The lowest income group, in the second survey, had the same size of family and essentially the same per capita

income as the comparable group in the first survey. The second income group in the May-June survey had a slightly larger average size of family, but the same per capita income as the comparable group in the first survey. The third income group in the second survey had a slightly smaller average size of family and a lower per capita income than did the comparable group in the first survey; the highest income group in the second survey had a smaller size of family but a much higher average per capita income than did the comparable group in the first survey.

TABLE 1-B. SELECTED CHARACTERISTICS OF FAMILIES SURVEYED, 1,007 FAMILIES, PHILIPPINES, MAY-JUNE 1971

ITEM	Per capita income group				TOTAL OR AVERAGE
	Less than P400	P400- 799	P800- 1,499	P1,500 and over	
Number of families	350	262	226	169	1,007
Number of persons	2,667	1,931	1,540	1,106	7,244
Average size of family	7.6	7.4	6.8	6.5	7.2
Average family income	P1,730	P4,167	P7,252	P25,256	P7,551
Average per capita income	P 227	P 565	P1,064	P 3,859	P1,050

For all 2,010 respondents, the average size of family was 7.2 persons, the average family income was P7,217 and the per capita income averaged P1,008 (table 1-C). This level of income per capita is approximately equal to \$158 at an exchange rate of 6.4. The lowest income families, with 7.6 members, had an average per capita income of P229. The second income group had 7.2 family members and a per capita income of P564; the third income group — 6.9 members and P1,163 per capita income. The highest income group had 6.6 members/family and an average per capita income of P3,201.

TABLE 1-C. SELECTED CHARACTERISTICS OF FAMILIES SURVEYED, 2,010 FAMILIES, PHILIPPINES, OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

ITEM	Per capita income group				TOTAL OR AVERAGE
	Less than P400- P400	P400- 799	P800- 1,499	P1,500 and over	
Number of families	654	573	419	364	P 2,010
Number of persons	4,984	4,104	2,899	2,398	14,385
Average size of family	7.6	7.2	6.9	6.6	7.2
Average family income	P1,747	P4,042	P8,048	P21,090	P 7,217
Average per capita income	P 229	P 564	P1,163	P 3,201	P 1,008

TOTAL CONSUMPTION

During the October-November 1970 survey, the weekly rate of cereal consumption per 1,000 persons averaged 2,693 kgs., equal to approximately 2.7 kgs./person/week (table 2-A). The lowest rate of use occurred in the lowest income group of families; the highest rate of use in the highest income group of families.

TABLE 2-A. RATE OF USE OF CEREALS BY KIND, 1,003 FAMILIES, PHILIPPINES, ONE WEEK, OCTOBER-NOVEMBER 1970

KIND	Per capita income group				ALL FAMILIES
	Less than P400- P400	P400- 799	P800- 1,499	P1,500 and over	
	Kilograms/1,000 people				
Rice and rice products	1,827.1	1,944.5	2,013.3	2,159.6	1,958.4
Corn and corn products	576.9	421.8	199	169.4	384
Wheat products	210.2	339.3	428.5	541.5	350.9
TOTAL	2,614.2	2,705.6	2,640.8	2,870.5	2,693.3

Rice and rice products represented nearly 73% of the total cereal used with corn and corn products second and wheat products a close third. Rice and rice products were used at a weekly rate of 1,958 kgs./1,000 persons, equal to an annual rate of use of 101.8 kgs./person. Corn and corn products were used at the rate of 384 kgs./1,000 people which is equal to an annual rate of 20 kgs. per capita. Wheat products were used at the weekly rate of 351 kgs./1,000 people, equal to an annual rate of 18.2 kgs. per capita.

The rate at which rice and rice products were used increased as incomes increased; the rate for corn and corn products decreased sharply; and the rate for wheat products increased sharply.

As a result of the sharp increase in corn prices (from November to June) a substantial shift occurred in the composition of the cereal foods used from the October-November 1970 survey to the May-June 1971 survey. And perhaps due to the general increase in all prices, cereal consumption increased slightly from the first to the second survey. The weekly rate of use of all cereals per 1,000 people increased from the October-November 1970 level of 2,693 kgs. to 2,832 kgs. in the May-June 1971 period (table 2-B). The difference between the two rates of use

TABLE 2-B. RATE OF USE OF CEREALS BY KIND,
1,007 FAMILIES, PHILIPPINES, ONE WEEK,
MAY-JUNE 1971

KIND	Per capita income group				
	Less than P400	P400- 799	P800- 1,499	P1,500 and over	ALL FAMILIES
	Kilograms/1,000 people				
Rice and rice products	2,123	2,123.2	2,308.7	2,239.6	2,179.7
Corn and corn products	364.1	221	164.3	125.7	247.1
Wheat products	275.3	411.4	507.4	757.6	405.5
TOTAL	2,762.4	2,755.6	2,980.4	3,122.9	2,832.3

is equal to an increase of slightly more than 0.1 kg./person each week. Rice and rice products usage increased from 1,958 to 2,180 kgs./1,000 persons, equal to an increase of approximately 0.2 kg. per capita/week. Corn and corn products declined from 384 to 247 kgs./1,000 persons, a drop of a little more than 0.1 kg., while a slight increase occurred in the consumption of wheat products (from 351 to 406 kgs./1,000 persons).

Rice and rice products represented 77% of the cereals used, with wheat products second and corn and corn products third in the May-June 1971 survey. The weekly use of rice and rice products averaged 2,180 kgs./1,000 people, equal to an annual per capita rate of 113.4 kgs. The use of corn and corn products on an annual per capita basis declined (from the October-November level) to 12.8 kgs., while wheat products increased to an annual rate of 21.1 kgs. per capita.

All income groups used more rice and rice products, less corn and corn products and more wheat products in the May-June 1971 period than in the October-November 1970 period. The rate of rice usage was the same and at the lowest level in the two lowest income groups and highest in the third income group. Corn usage declined sharply as incomes increased; wheat consumption increased sharply.

TABLE 2-C. RATE OF USE OF CEREALS BY KIND,
2,010 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

KIND	Per capita income group				
	Less than ₱400	₱400- 799	₱800- 1,499	₱1,500 and over	ALL FAMILIES
	Kilograms/1,000 people				
Rice and rice products	1,975	2,033.8	2,161	2,199.6	2,069
Corn and corn products	470.5	321.4	181.6	147.5	315.6
Wheat products	242.7	375.3	468	649.6	378.3
TOTAL	2,688.2	2,730.5	2,810.6	2,996.7	2,762.9

Combining both surveys, the weekly rate of use of cereals averaged 2,763 kgs./1,000 persons weekly (table 2-C). This is equal to an annual per capita rate of use of 143.7 kgs. Rice and rice products con-

sumption, at 2,069 kgs./1,000 persons, equaled 107.6 kgs. per capita on an annual basis; corn and corn products, 16.4 kgs. per capita; and wheat products, 19.7 kgs. These rates of usage differ substantially from those reported by the NEC as the average per capita consumption (see page 1).

The consumption of all cereals increased as incomes increased, going from a weekly rate of 2,688 kgs./1,000 people in the lowest income group to a rate of 2,997 kgs. in the highest income group. Even in the lowest income group, the total use of the three groups of cereal foods exceeded that reported as the "National Average" — 139.8 versus 125.6 kgs.

Rice and rice products consumption increased as incomes increased, going from a usage rate of 1,975 kgs. weekly/1,000 people in the lowest income group to 2,200 kgs. in the highest income group — an increase of about 10%. The usage rate in the lowest income group equaled an annual rate of 102.7 kgs./person — well above that reported as the "National Average" for 1968 (87 kgs.). The consumption rate for corn and corn products declined 69% from the lowest to the highest income group. The usage rate for wheat products in the highest income group was nearly 2.7 times greater than in the lowest income group.

KINDS USED

Rice and Rice Products

Rice, as should be expected, was the major rice product used. In the October-November 1970 survey, rice accounted for 96% of the total, with rice noodles and rice cakes ranking a distant second and third in importance (table 3-A). As incomes increased, the consumption of rice increased moderately, going from a weekly rate of 1,756 kgs./1,000 people in the lowest income group to a rate of 2,058 kgs. in the highest income group. Although rice noodles and rice cakes were relatively minor items, their rates of use increased rather sharply as income increased.

TABLE 3-A. RATE OF USE, RICE AND RICE PRODUCTS,
1,003 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970

ITEM	Per capita income group				ALL FAMILIES
	Less than P400	P400 799	P800- 1,499	P1,500 and over	
<u>Kilograms/1,000 people</u>					
Rice:					
Wagwag	166.6	304.1	284.5	383.3	270.1
C-4	240.4	276.6	213.6	241.2	246.3
IR-8	247.8	148.5	170.5	76.4	171.9
BE-3	90.5	143.1	180.5	251.1	152.7
Intan	102.5	110.7	167.9	116.9	120
IR-5	122.1	67.4	36.4	104.2	85.9
Malagkit	7.7	18	28.8	19.7	17
Tjeremas	41	—	8.4	10.2	16.7
BPI-76	14.8	11.6	25.4	11.5	15.3
IR-20	5.9	14.3	—	1.8	6.6
Other	736.2	779.4	814.9	841.9	783.5
TOTAL	1,755.5	1,873.2	1,930.9	2,058.2	1,886
Rice noodles	26.9	42.4	43.7	60.2	40.8
Rice cakes	24.7	28.9	38.7	41.2	31.6
TOTAL	1,827.1	1,944.5	2,013.3	2,159.6	1,958.4

Respondents were asked to identify the variety of rice purchased or used, and, as a result, more than sixty different varietal names were listed. Many of the names were of local origin which made it difficult to precisely identify the variety used. The data in table 3-A show the ten leading varieties that represented about 60% of the rice used. Wagwag was the leading variety used; C-4 ranked a close second; IR-8 was third, BE-3 fourth and Intan fifth. The highest and lowest income groups in the rates of use for the five leading varieties were as follows:

	<u>Highest rate of use</u>	<u>Lowest rate of use</u>
Wagwag	Highest income group	Lowest income group
C-4	Second income group	Third income group

IR-8	Lowest income group	Highest income group
BE-3	Highest income group	Lowest income group
Intan	Third income group	Lowest income group

In the May-June survey, rice again accounted for practically all the rice and rice products used. The rates of consumption were higher for rice (especially in the lower three income groups) and rice noodles, but lower for rice cakes than in the earlier survey (table 3-B). The consumption of rice increased from the lowest to the third income group, then declined in the highest income group. Rice noodles were used at a relatively high rate in the two high-income groups but at a relatively low rate in the two low ones. Rice cakes showed a variable pattern as incomes increased.

TABLE 3-B. RATE OF USE, RICE AND RICE PRODUCTS,
1,007 FAMILIES, PHILIPPINES, ONE WEEK,
MAY-JUNE 1971

ITEM	Per capita income group				ALL FAMILIES
	Less than P400	P400-799	P800-1,499	P1,500 and over	
	Kilograms/1,000 people				
Rice:					
Wagwag	403.8	402.3	610.3	654.5	485.6
C-4	297.8	398.2	499.3	488.4	377.3
BE-3	158.3	257.4	167.8	142.4	181.1
IR-8	226.3	229	94.2	85.3	167.4
IR-5	174.8	133.3	148.6	115.5	149.1
Intan	97	83	105.3	144.7	102.3
Malagkit	27.6	3.6	78.1	50.6	35.4
IR-20	56.9	18.1	31.6	58.2	32.5
Tjeremas	16.4	28	10.4	—	15.7
BPI-76	8.6	8.3	15.7	8.3	10.
Other	594.5	509	443	392.1	550
TOTAL	2,062	2,070.2	2,204.3	2,140	2,106.4
Rice noodles	38.5	34.3	73.7	74.6	50.4
Rice cakes	22.5	18.7	30.7	25	22.9
TOTAL	2,123	2,123.2	2,308.7	2,239.6	2,179.7

The two leading varieties used in the May-June survey were Wagwag and C-4, with the former accounting for 23% of the total and the latter 18%. Since both of these varieties were used at much higher rates in the May-June period than in the earlier one, it suggests that a substantial amount of upgrading occurred during the period of rising prices. BE-3 ranked third, IR-8 fourth and IR-5 fifth in importance. The income groups with the highest and lowest rates of use were as follows:

	<u>Highest rate of use</u>	<u>Lowest rate of use</u>
Wagwag	Highest income group	Second income group
C-4	Third income group	Lowest income group
BE-3	Second income group	Highest income group
IR-8	Second income group	Highest income group
IR-5	Lowest income group	Highest income group

Combining the two surveys, the results show a modest increase in the rate of rice usage as incomes increased, going from a weekly rate of 1,919 kgs./1,000 people in the lowest income group to 2,099 kgs. in the highest income group (table 3-C). The presence of domestic help in higher-income homes likely contributes to their using more rice than lower-income families. The consumption of rice noodles also increased with incomes but that for rice cakes increased up to the third income group, then essentially held steady.

The rate of use of Wagwag and C-4 increased as incomes increased but that for IR-8 decreased. All the other important varieties showed variable patterns. As a result, the highest and lowest rates of use for the five leading varieties were as follows:

	<u>Highest rate of use</u>	<u>Lowest rate of use</u>
Wagwag	Highest income group	Lowest income group
C-4	Highest income group	Lowest income group
IR-8	Lowest income group	Highest income group
BE-3	Second income group	Lowest income group
IR-5	Lowest income group	Third income group

TABLE 3-C. RATE OF USE, RICE AND RICE PRODUCTS,
2,010 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

ITEM	Per capita income group				ALL FAMILIES
	Less than ₱400	₱400- 799	₱800- 1,499	₱1,500 and over	
	<u>Kilograms/1,000 people</u>				
Rice:					
Wagwag	285.2	353.2	447.4	518.9	377.8
C-4	269.1	337.2	356.4	364.8	311.8
IR-8	237	188.7	132.4	80.8	169.7
BE-3	124.4	200.2	174.1	196.8	166.9
IR-5	148.5	100.4	92.5	109.8	117.5
Intan	99.7	96.8	136.6	130.8	111.2
Malagkit	17.6	10.8	53.5	35.2	26.2
IR-20	31.4	16.2	15.8	30	19.6
Tjeremas	28.7	14	9.4	5.1	16.2
BPI-76	11.7	10	20.5	9.9	12.6
Other	665.3	644.2	629	617	666.7
TOTAL	1,918.7	1,971.7	2,067.6	2,099.1	1,996.2
Rice noodles	32.7	38.3	58.7	67.4	45.6
Rice cakes	23.6	23.8	34.7	33.1	27.2
TOTAL	1,975	2,033.8	2,161	2,199.6	2,069

Wagwag was the major variety used in all income groups and C-4 was the second most important one. The third most important variety in the lowest income group was IR-8, while BE-3 ranked third in the other income groups.³

³The kind of rice planted in the NFAC-programmed areas for the ten-month period July 1970-April 1971, as reported by the Agricultural Productivity Commission, were as follows:

Kind	Thous. ha.	Kind	Thous. ha.	Kind	Thous. ha.
IR-8	203	C-4-63G	79	C-18	9
IR-5	169	BPI-76	40	Former	
C-4-63	99	IR-22	16	seedboard	
IR-20	80	C-4-113	9	varieties	116
				Other	112

CORN AND CORN PRODUCTS

The most important corn item used during the October-November 1970 survey was corn grits, which amounted to 354 kgs./1,000 persons, and represented 92% of the total corn and corn products used (table 4-A). White corn ranked a distant second in importance with green, or sweet corn third.

TABLE 4-A. RATE OF USE, CORN AND CORN PRODUCTS,
1,003 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970

ITEM	Per capita income group				ALL FAMILIES
	Less than P400	P400- 799	P800- 1,499	P1,500 and over	
	Kilograms/1,000 people				
Corn grits	540	384.9	182.8	150.9	354.5
White corn	21.3	28.7	10.2	1.8	17.9
Green, or sweet corn	9.1	6.2	3.6	9.4	7.2
Corn flour or meal	5.2	1	1.8	0.3	2.4
Yellow cakes	1.3	1	0.6	7	2.1
TOTAL	576.9	421.8	199	169.4	384

The use of corn grits declined sharply as incomes increased. The lowest income group of families used this product at the weekly rate of 540 kgs./1,000 people; the high-income families, 151 kgs./1,000 people. White corn usage was most important in the two lowest income groups, dropped sharply in the third income group and was virtually zero in the highest income group. The usage of the other corn items showed variable patterns relative to incomes.

In the May-June survey, the most important item was still corn grits, with a weekly usage rate of 184 kgs./1,000 people. This rate of usage was approximately half that reported for the October-November 1970 survey and resulted in the item representing 75% of the corn and corn products used. The use of white corn (presumably for home

preparation) was 60% higher in the May-June period than in the October-November survey. Green, or sweet corn had a usage in the May-June study over three times that for the first survey, reflecting the availability of the product.

The two lowest income groups showed sharp reductions in the use of corn and corn products from the October-November survey to the May-June one.

TABLE 4 B. RATE OF USE, CORN AND CORN PRODUCTS,
PHILIPPINES, 1,007 FAMILIES, ONE WEEK,
MAY-JUNE 1971

ITEM	Per capita income group				ALL FAMILIES
	Less than P400	P400- 799	P800- 1,499	P1,500 and over	
	Kilograms/1,000 people				
Corn grits	284.8	175.3	102.6	70	184.1
White corn	44.2	21.5	14.4	24.5	28.8
Green, or sweet corn	29.7	19.5	19.6	24.8	24.1
Corn flour or meal	0.8	3.8	20.6	2.2	6.1
Yellow cakes	4.6	0.9	7.1	4.2	4
TOTAL	364.1	221	164.3	125.7	247.1

In this survey too, the use of corn grits declined sharply as incomes increased. The other items showed variable consumption patterns relative to incomes.

Combining both surveys, corn grits with a weekly usage rate of 269 kgs./1,000 people represented 85% of the corn and corn products used (table 4-C). White corn ranked second with a usage rate of 23 kgs./1,000 people and green, or sweet corn ranked third with a rate of nearly 16 kgs.

TABLE 4-C. RATE OF USE, CORN AND CORN PRODUCTS,
2,010 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

ITEM	Per capita income group				ALL FAMILIES
	Less than ₱400	₱400- 799	₱800- 1,499	₱1,500 and over	
	Kilograms/1,000 people				
Corn grits	412.4	280.1	142.7	110.4	269.2
White corn	32.7	25.1	12.3	13.2	23.4
Green, or sweet corn	19.4	12.8	11.6	17.1	15.6
Corn flour or meal	3	2.4	11.2	1.2	4.3
Yellow cakes	3	1	3.8	5.6	3.1
TOTAL	470.5	321.4	181.6	147.5	315.6

The rate of use of corn grits was highest in the lowest income group of families at 412 kgs./1,000 people. As incomes increased, the rate of use for corn grits declined sharply and averaged only 110 kgs./1,000 people in the highest income group. The use of white corn generally decreased as incomes increased, but the other items showed variable patterns relative to incomes.

WHEAT PRODUCTS

A wide variety of wheat products was used by the families surveyed. In the October-November 1970 survey, *pan de sal* was the most important item used with a weekly usage rate of 151 kgs./1,000 people (table 5-A). At this level of use, *pan de sal* represented 43% of the total wheat products consumed. Loaf bread ranked second with a usage of 92 kgs./1,000 people. The two leading items accounted for 70% of the wheat products used. Cookies ranked third in importance followed by wheat noodles and wheat flour.

TABLE 5-A. RATE OF USE, WHEAT PRODUCTS,
1,003 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970

ITEM	Per capita income group				ALL FAMILIES
	Less than P400-	P400- 799	P800- 1,499	P1,500 and over	
	Kilograms/1,000 people				
Pan de sal	117.	170.	160.3	170.6	151.
Loaf bread	36.4	57.1	132.3	206.6	91.7
Cookies	18.7	31.6	36.8	41.7	30.2
Wheat noodles	6.9	25.1	28.8	36.	21.9
Wheat flour	12.9	15.5	23.	37.3	20.1
Cakes and pies	2.	8.5	14.6	19.4	9.5
Rolls	6.3	6.9	5.6	5.6	6.2
Stuffed baked bread	1.4	5.7	6.1	3.5	4.
Lumpia wrappers	0.7	0.8	1.2	1.	0.9
Other	7.9	18.1	19.8	19.8	15.4
TOTAL	210.2	339.3	428.5	541.5	350.9

The rate of use for five of the six leading items (loaf bread, cookies, wheat noodles, wheat flour and cakes and pies), increased as incomes increased, with the sharpest rates of increase occurring with cakes and pies, loaf bread and wheat noodles. The use of *pan de sal* increased sharply from the first to the second income group, declined somewhat in the third group, then increased in the highest income group to about the level of that for the second income group. The other items showed variable patterns relative to incomes.

In the May-June survey, *pan de sal* was again the leading wheat product used with a weekly rate of 191 kgs./1,000 people, equal to slightly more than 47% of the total wheat products (table 5-B). Again, loaf bread and cookies ranked second and third; wheat flour and rolls were the next most important items.

TABLE 5-B. RATE OF USE, WHEAT PRODUCTS,
1,007 FAMILIES, PHILIPPINES, ONE WEEK,
MAY-JUNE 1971

ITEM	Per capita income group				ALL FAMILIES
	Less than P400	P400- 799	P800- 1,499	P1,500 and over	
	Kilograms/1,000 people				
Pan de sal	173.4	226.4	220.2	267.7	191.2
Loaf bread	26.3	89.2	148.9	249.5	103.2
Cookies	24.8	33.1	46.3	56.8	36.5
Wheat flour	19.3	20.9	25.1	54.4	18
Rolls	6.7	18.5	24.9	19.3	15.6
Stuffed baked bread	11.1	5.5	11.7	35	13.4
Cakes and pies	3.9	4.6	13.1	41.4	11.8
Wheat noodles	5.4	8.5	11.9	26.8	10.8
Lumpia wrappers	1.9	1.1	1.5	5.6	2.2
Other	2.5	3.6	3.8	1.1	2.8
TOTAL	275.3	411.4	507.4	757.6	405.5

For five items (loaf bread, cookies, wheat flour, cakes and pies and wheat noodles), the rate of use increased as incomes increased. The sharpest increases occurred with cakes and pies and loaf bread. *Pan de sal* again showed a variable pattern as it increased from the lowest to the second income group, declined somewhat in the third group, then increased to its highest level in the highest income group.

Combining both surveys, *pan de sal* was the leading wheat product used with a weekly rate of 171 kgs./1,000 people, which represented 45% of the wheat products used (table 5-C). Loaf bread, with a rate of 98 kgs./1,000 people, ranked second and cookies third. Wheat flour and wheat noodles ranked next in the order of importance.

TABLE 5-C. RATE OF USE, WHEAT PRODUCTS,
2,010 FAMILIES, PHILIPPINES, ONE WEEK,
OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

ITEM	Per capita income group				ALL FAMILIES
	Less than P400	P400- 799	P800- 1,499	P1,500 and over	
	Kilograms/1,000 people				
Pan de sal	145.2	198.2	190.2	219.1	171.1
Loaf bread	31.3	73.1	140.6	228.1	97.5
Cookies	21.8	32.4	41.6	49.2	33.3
Wheat flour	16.1	18.2	24.1	45.9	19.1
Wheat noodles	6.1	16.8	20.3	31.4	16.3
Rolls	6.5	12.7	15.3	12.4	10.9
Cakes and pies	3	6.5	13.8	30.4	10.7
Stuffed baked bread	6.2	5.6	8.9	19.3	8.7
Lumpia wrappers	1.3	1	1.4	3.3	1.6
Other	5.2	10.8	11.8	10.5	9.1
TOTAL	242.7	375.3	468	649.6	378.3

The rate of use for loaf bread, cookies, wheat flour, wheat noodles and cakes and pies increased as incomes increased. The use of *pan de sal* increased from the lowest to the second income group, declined somewhat in the third group, and then increased to the peak level in the highest income group. The use of rolls increased from the lowest to the third income group, then declined.

INCOME-QUANTITY ELASTICITY

The percentage change in quantity used in relation to a 1% change in income is called the *coefficient of income-quantity elasticity*. This is a second way of examining the relation of income to consumption. The coefficients of income-quantity elasticity based on data obtained in the October-November 1970 survey are presented in table 6-A.

The coefficients for all cereals were very low, being 0.04, - 0.03 and 0.12 for the lowest to the second income group, second to third

and third to highest income group, respectively. Comparably low coefficients were also shown for all rice and rice products and all rice. Negative coefficients existed for all corn and corn products and corn grits, meaning that consumption declines as incomes increase. Wheat products, in total, showed relatively high positive coefficients. Loaf bread and cakes and pies had relatively high coefficients in the wheat products group, while *pan de sal* had a relatively high coefficient from the first to the second income group but near zero thereafter.

TABLE 6-A. INCOME-QUANTITY ELASTICITY, PHILIPPINES;
ONE WEEK OCTOBER-NOVEMBER 1970

ITEM	Lowest to second in- come group	Second to third in- come group	Third to highest in- come group
All rice and rice products:	0.07	0.04	0.04
Rice: All	0.06	0.02	0.09
Wagwag	0.70	-0.08	0.42
C-4	0.16	-0.32	0.17
IR-8	-0.60	0.17	-1.09
BE-3	0.54	0.30	0.46
Intan	0.09	0.53	-0.51
Rice noodles	0.53	0.04	0.45
Rice cakes	0.18	0.37	0.09
All corn and corn products:	-0.37	-0.93	-0.23
Yellow cakes	-0.31	-0.65	2.42
White corn	0.35	-1.23	-2.01
Corn grits	-0.40	-0.92	-0.27
Green, or sweet corn	-0.45	-0.68	1.28
Corn flour or meal	-1.62	0.74	-2.05
All wheat products:	0.56	0.30	0.33
Wheat flour	0.22	0.50	0.66
Wheat noodles	1.36	0.18	0.32
Loaf bread	0.53	1.03	0.63
Rolls	0.11	-0.27	0.00
Pan de sal	0.43	-0.07	0.09
Cookies	0.61	0.20	0.18
Stuffed baked bread	1.69	0.09	-0.77
Cakes and pies	1.48	0.68	0.40
Lumpia wrappers	0.16	0.52	-0.26
Other	0.94	0.11	0.00
ALL CEREALS	0.04	-0.03	0.12

Results of the May-June 1971 survey showed all cereals again had very low to zero coefficients of income-quantity elasticity (table 6-B). The same was true for all rice products and all rice. All corn and corn products and corn grits generally had sizable negative coefficients. Most of the wheat product items had positive coefficients.

TABLE 6-B. INCOME-QUANTITY ELASTICITY, PHILIPPINES,
ONE WEEK, MAY-JUNE 1971

ITEM	Lowest to second in- come group	Second to third in- come group	Third to highest in- come group
All rice and rice products:	0.00	0.13	-0.02
Rice: All	0.00	0.10	-0.02
Wagwag	0.00	0.67	0.06
C-4	0.34	0.36	-0.02
BE-3	0.56	-0.68	-0.14
IR-8	0.01	-1.36	-0.08
IR-5	-0.31	0.17	-0.22
Rice noodles	-0.14	0.19	0.01
Rice cakes	-0.22	0.79	-0.18
All corn and corn products:	-0.57	-0.48	-0.11
Yellow cakes	-1.50	2.49	-0.07
White corn	-0.81	-0.64	0.46
Corn grits	-0.55	-0.85	-0.33
Green, or sweet corn	-0.48	0.01	0.21
Corn flour or meals	1.53	2.25	-1.42
All wheat products:	0.46	0.34	0.35
Wheat flour	0.09	0.30	0.65
Wheat noodles	0.52	0.54	0.68
Loaf bread	1.27	0.82	0.44
Rolls	1.10	0.48	-0.22
Pan de sal	0.31	-0.04	0.17
Cookies	0.33	0.54	0.18
Stuffed baked bread	0.79	1.17	0.88
Cakes and pies	0.19	1.57	0.91
Lumpia wrappers	-0.62	0.50	1.02
Other	0.42	0.09	-0.97
ALL CEREALS	0.00	0.11	0.04

TABLE 6-C. INCOME-QUANTITY ELASTICITY, PHILIPPINES, ONE WEEK, OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

ITEM	Lowest to second in- come group	Second to third in- come group	Third to highest in- come group	Lowest to highest in- come group
All rice and rice products:	0.03	0.09	0.01	0.06
Rice: All	0.03	0.06	0.03	0.05
Wagwag	0.35	0.29	0.24	0.33
C-4	0.25	0.02	0.07	0.17
IR-8	-0.28	-0.50	-0.58	-0.56
BE-3	0.51	-0.21	0.14	0.25
IR-5	-0.49	-0.01	0.13	-0.17
Rice noodles	0.19	0.61	0.23	0.39
Rice cakes	0.02	0.58	-0.04	0.19
All corn and corn products:	-0.42	-0.70	-0.17	-0.60
Yellow cakes	-0.90	0.92	1.17	0.34
White corn	-0.28	-0.93	0.77	-0.42
Corn grits	-0.42	-0.88	-0.30	-0.66
Green, or sweet corn	-0.46	-0.03	0.32	-0.07
Corn flour or meal	-0.04	1.49	-0.31	-0.49
All wheat products:	0.51	0.32	0.34	0.41
Wheat flour	0.15	0.40	0.65	0.55
Wheat noodles	0.94	0.36	0.49	0.77
Loaf bread	0.94	0.93	0.52	0.87
Rolls	0.60	0.36	-0.35	0.36
Pan de sal	0.35	-0.02	0.12	0.23
Cookies	0.45	0.37	0.16	0.44
Stuffed baked bread	-0.21	2.68	0.70	0.59
Cakes and pies	0.90	0.99	0.77	0.95
Lumpia wrappers	-0.23	0.51	0.38	0.50
Other	0.91	0.00	0.00	0.38
ALL CEREALS	0.02	0.04	0.08	0.06

Combining both surveys, the income-quantity coefficients for all cereal foods were very low, indicating the demand for such foods, in total, is extremely income-inelastic (table 6-C). Essentially, the same situation existed for all rice and rice products and rice alone — the major item in the group. All corn and corn products had negative coefficients in all comparisons. The same was true for the major corn item (corn grits), which had coefficients of -0.42 from the first to the second income group, -0.88 from the second to the third and -0.30 from the third to the highest income group.

Wheat products (in total) showed positive coefficients of income-quantity elasticity of 0.51, 0.32 and 0.34 for the first, second and third comparisons, respectively. *Pan de sal* had a coefficient of 0.35 for the first comparison, but very low or negative coefficients in the next two comparison groups. Cakes and pies and loaf bread had the highest coefficients in the wheat products group. Wheat flour had coefficients that increased in magnitude for the three main income comparison groups.

Overall (from the lowest to the highest income group), rice had a coefficient of 0.05, all corn and corn products -0.60 and all wheat products 0.41.

The coefficients for the five leading varieties of rice were also computed. Wagwag showed all positive coefficients; IR-8 had all negative ones that increased in magnitude for the three main income comparison groups. The other three varieties showed variable patterns, with a mixture of positive and negative coefficients.

INCOME-EXPENDITURE ELASTICITY

Coefficients of income-expenditure elasticity measure the expenditure response to a 1% change in incomes. Expenditures reflect quantities used and prices paid. The latter reflects quality, source of product, location of consumers and numerous other considerations.

The coefficients of income-expenditure elasticity for the October-November 1970 survey are presented in table 7-A.

TABLE 7-A. INCOME-EXPENDITURE ELASTICITY, PHILIPPINES, ONE WEEK, OCTOBER-NOVEMBER 1970

ITEM	Lowest to second income group	Second to third income group	Third to highest income group
All rice and rice products:	0.36	0.30	0.36
Rice	0.32	0.04	0.37
Rice noodles	0.72	0.11	0.48
Rice cakes	0.31	0.45	0.06
All corn and corn products:	-0.40	-0.86	-0.21
Yellow cakes	0.10	0.22	1.76
White corn	0.25	-1.24	-2.04
Corn grits	-0.44	-0.87	-0.34
Green, or sweet corn	0.26	-0.63	0.61
Corn flour or meal	-1.82	0.95	-0.68
All wheat products:	0.06	0.55	0.22
Wheat flour	0.10	0.92	0.61
Wheat noodles	1.26	0.73	0.19
Loaf bread	0.59	1.03	0.46
Rolls	0.56	0.05	0.30
Pan de sal	0.51	-0.04	0.00
Cookies	0.35	0.66	0.30
Stuffed baked bread	1.15	0.59	-1.00
Cakes and pies	1.19	1.60	0.18
Lumpia wrappers	0.27	0.59	-0.36
Other	0.83	0.59	0.01
ALL CEREALS	0.32	0.11	0.30

The coefficients of income-expenditure elasticity for the May-June survey are given in table 7-B.

TABLE 7-B. INCOME-EXPENDITURE ELASTICITY, PHILIPPINES, ONE WEEK, MAY-JUNE 1971

ITEM	Lowest to second income group	Second to third income group	Third to highest income group
All rice and rice products	0.03	0.14	0.01
Rice	0.04	0.06	0.00
Rice noodles	-0.14	1.42	0.19
Rice cakes	0.19	0.67	-0.18
All corn and corn products	-0.53	-0.25	-0.22
Yellow cakes	-1.32	2.61	-0.64
White corn	-0.83	-0.17	0.19
Corn grits	-0.51	-0.78	-0.39
Green, or sweet corn	-0.09	0.36	0.34
Corn flour or meal	1.10	2.10	-0.52
All wheat products	0.44	0.68	-0.44
Wheat flour	0.24	0.36	0.78
Wheat noodles	0.39	1.24	0.48
Loaf bread	1.20	0.93	0.34
Rolls	1.17	0.45	0.49
Pan de sal	0.19	0.20	0.10
Cookies	0.60	0.66	0.26
Stuffed baked bread	0.00	1.38	0.77
Cakes and pies	-0.12	2.12	1.12
Lumpia wrappers	0.37	1.80	0.49
Other	0.14	0.68	-0.82
ALL CEREALS	0.05	0.24	0.14

Combining the two surveys, the coefficients of income-expenditure elasticity were generally of greater magnitude than those of income-quantity elasticity (table 7-C). For all cereals and the three main comparisons used, the coefficients were 0.19, 0.18 and 0.17, respectively. For all rice and rice products, they were 0.19, 0.22 and 0.18. All corn and corn products had coefficients of -0.46, -0.56 and -0.22, while all wheat products had 0.25, 0.61 and 0.33.

TABLE 7-C. INCOME-EXPENDITURE ELASTICITY, PHILIPPINES, ONE WEEK, OCTOBER-NOVEMBER 1970 AND MAY-JUNE 1971

ITEM	Lowest to second income group	Second to third income group	Third to highest income group	Lowest to highest income group
All rice and rice products:	0.19	0.22	0.18	0.20
Rice	0.18	0.05	0.18	0.16
Rice noodles	0.29	0.76	0.33	0.53
Rice cakes	0.25	0.56	-0.06	0.30
All corn and corn products:	-0.46	-0.56	-0.22	-0.54
Yellow cakes	-0.61	1.41	0.56	0.42
White corn	0.29	-0.70	-0.92	-0.51
Corn grits	-0.42	-0.82	-0.36	-0.66
Green, or sweet corn	-0.08	0.15	0.42	0.21
Corn flour or meal	-0.36	1.52	-0.60	0.28
All wheat products:	0.25	0.61	0.33	0.39
Wheat flour	0.17	0.64	0.69	0.65
Wheat noodles	0.82	0.98	0.28	0.81
Loaf bread	0.89	0.98	0.40	0.85
Rolls	0.67	0.25	0.40	0.68
Pan de sal	0.35	0.08	0.05	0.22
Cookies	0.42	0.66	0.28	0.58
Stuffed baked bread	0.57	0.98	0.11	0.76
Cakes and pies	0.53	1.86	0.75	1.01
Lumpia wrappers	0.32	1.19	0.07	0.60
Other	0.48	0.63	-0.40	0.50
ALL CEREALS	0.19	0.18	0.17	0.47

The overall coefficients (from the lowest to the highest income group) were 0.47 for all cereals, 0.20 for all rice and rice products, -0.54 for all corn and corn products and 0.39 for all wheat products. Rice had a coefficient of 0.16 and corn grits -0.66.