

PALAY HARVEST AND THE SUPPLY OF RICE ¹

By

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Geographical Pattern of Rice Production

The geographical pattern of rice production is largely influenced by climatic, topographical and soil conditions and by the distribution of population. Because of constant changes in population density of the different regions with respect to one another, the geographical pattern of production is subject to change although, as a rule, any such change takes place but slowly.

In any study of the geographical pattern of rice production in this country, this fact must be borne in mind. The three most important rice producing regions are still the same as before the war. They are Central Luzon, Western Visayas and Southern Tagalog. The regions of lesser importance before the war, however, have not remained in the same order. Reference is made to Ilocos, to Northern and Eastern Mindanao, to the Cagayan Valley, to Southern and Western Mindanao, to Bicol and to Eastern Visayas. Compared on the basis of area planted, last year and this year, with the corresponding five-year average area planted in 1938-42, Ilocos is now the least important whereas it was Northern and Eastern Mindanao before the war. Southern and Western Mindanao was the second least important before the war, now it is Cagayan Valley (Tables 8 and 9).

Last year, 21.47% of the total area planted to rice in this country was planted in Central Luzon. This region has still the largest area planted to rice but before the war, 30.53% of the total rice area of the country was planted in this region. It has thus suffered a reduction by 9.06% in its rice area relative to the total area planted to the cereal in this country. Southern

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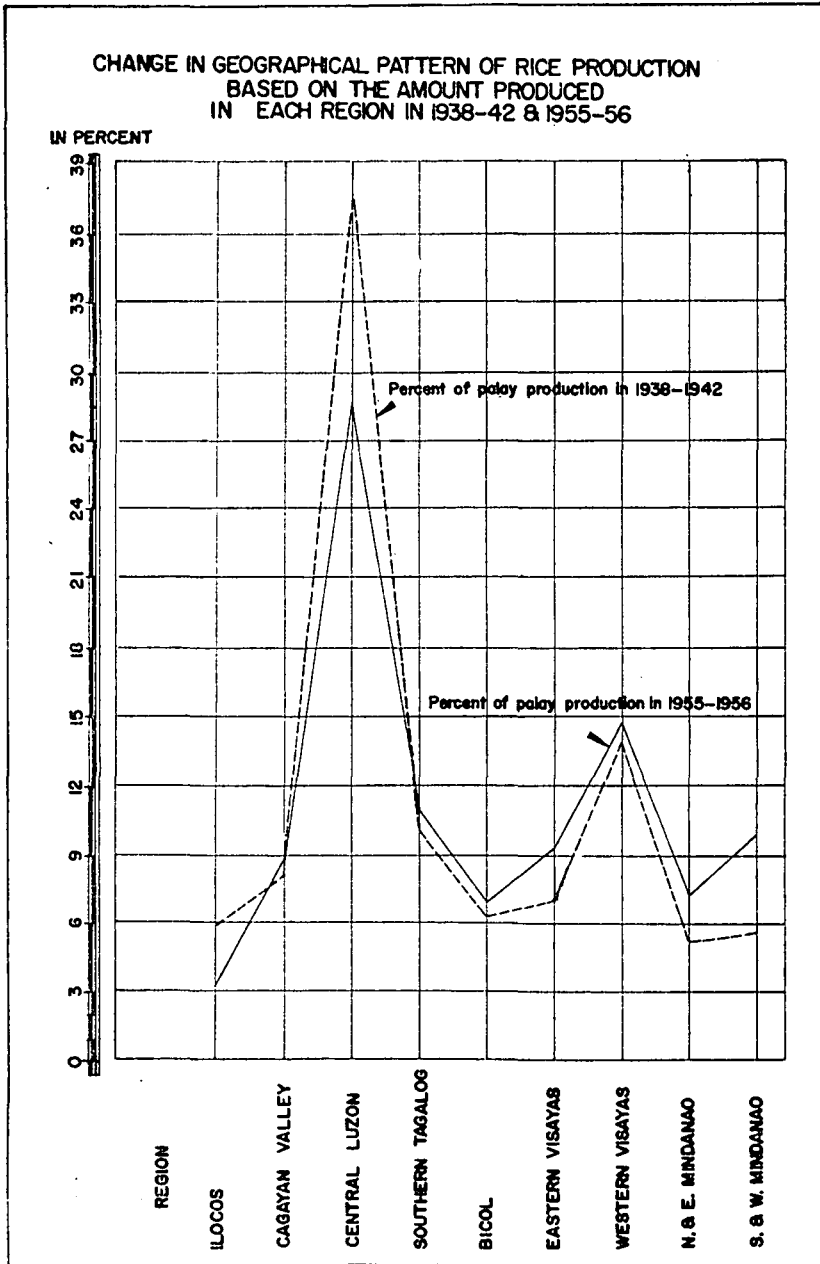
¹ Continued from the last issue, Phil. Stat., Vol. VI—No. 2, June, 1957.

Table 8.—Palay: Percentage distribution of production, by region, Philippines

Region	1938-42	1948-52	1952-53	1953-54	1954-55	1955-56	1956-57 ^a	
							Number of cavans of palay	Percentage distribution
Ilocos	5.86	5.61	5.23	2.53	3.54	3.32	2,701,500	3.56
Cagayan Valley	8.03	7.85	9.54	10.82	9.67	8.92	6,739,900	8.87
Central Luzon	37.98	32.42	30.37	26.57	26.93	28.89	22,010,000	28.97
Southern Tagalog	10.17	10.61	11.39	12.36	11.39	10.85	8,263,200	10.88
Bicol	6.22	7.43	5.02	8.31	7.48	6.94	5,157,600	6.79
Eastern Visayas	7.05	8.46	7.89	8.18	9.43	9.29	7,271,000	9.57
Western Visayas	14.11	15.80	14.44	15.57	14.81	14.83	10,981,300	14.46
Northern and Eastern Mindanao	5.10	5.16	5.78	9.02	7.15	7.14	5,281,000	6.95
Southern and Western Mindanao	5.48	6.66	10.34	6.64	9.60	9.82	7,561,300	9.95
TOTAL (Philippines)	100.00	100.00	100.00	100.00	100.00	100.00	77,514,270	100.00

^a As of January 1 forecast of 1957 crop production.

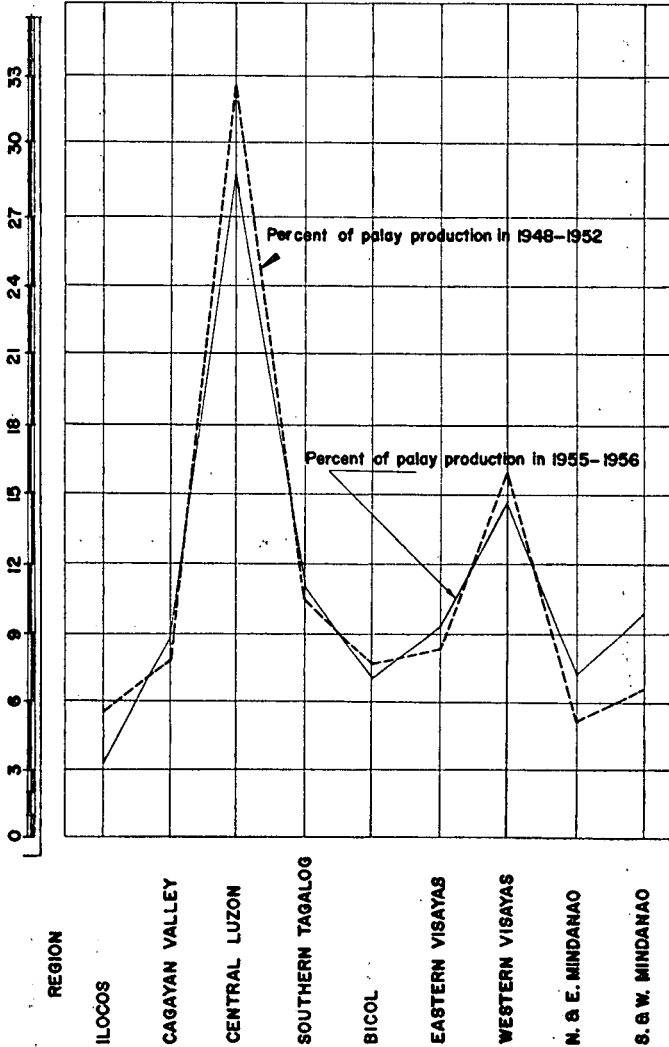
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Prepared by the DIVISION OF AGRICULTURAL ECONOMICS, DARR

CHANGE IN GEOGRAPHICAL PATTERN OF RICE PRODUCTION BASED
ON THE AMOUNT PRODUCED IN EACH
REGION IN 1948-1952 & 1955-1956

IN PERCENT



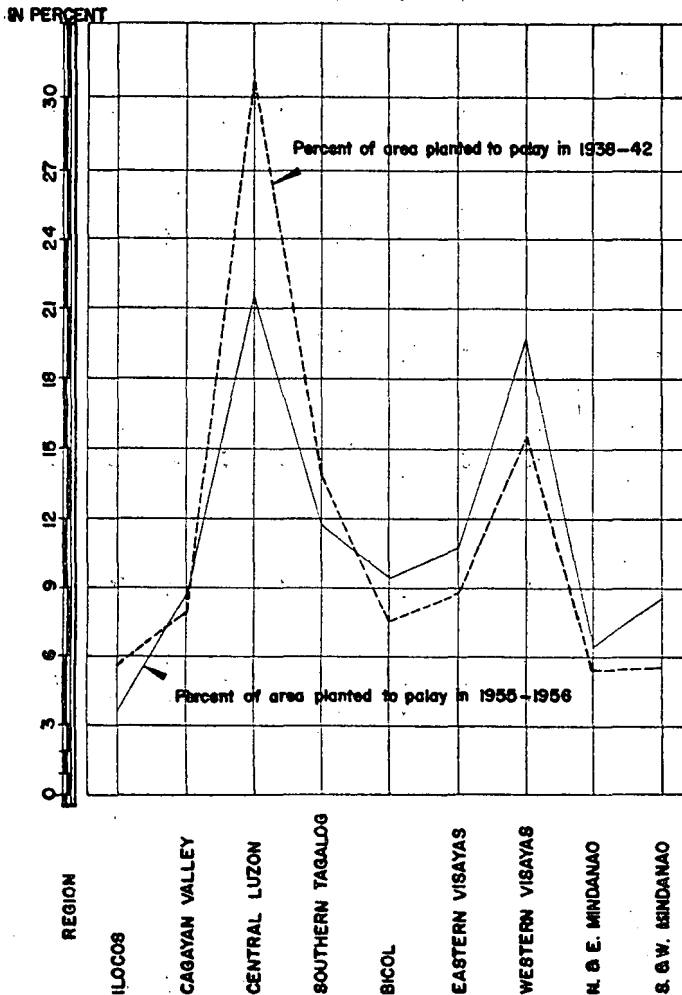
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Table 9. — Palay: Percentage distribution of area planted, by region, Philippines

Region	1938-42	1948-52	1952-53	1953-54	1954-55	1955-56	1956-57 ^a	
							Number of hectares	Percentage distribution
Ilocos	5.41	5.50	4.94	4.00	3.80	3.48	98,000	3.56
Cagayan Valley	7.94	7.23	8.55	8.18	8.94	8.53	237,600	8.62
Central Luzon	30.53	30.05	27.29	23.97	21.59	21.47	599,900	21.76
Southern Tagalog	13.57	12.04	11.95	12.30	12.48	11.67	328,000	11.90
Bicol	7.34	8.53	8.20	10.62	9.99	9.26	553,200	9.19
Eastern Visayas	8.93	9.41	8.39	12.47	11.19	10.76	294,300	10.68
Western Visayas	15.52	16.66	15.67	16.52	18.26	19.96	533,800	19.36
Northern and Eastern Mindanao	5.36	4.80	5.33	8.03	5.87	6.19	166,800	6.05
Southern and Western Mindanao	5.40	5.69	9.18	3.91	7.88	8.68	244,900	8.88
TOTAL (Philippines)	100.00	100.00	100.00	100.00	100.00	100.00	2,756,500	100.00

^a As of January 1 forecast of 1957 crop production.

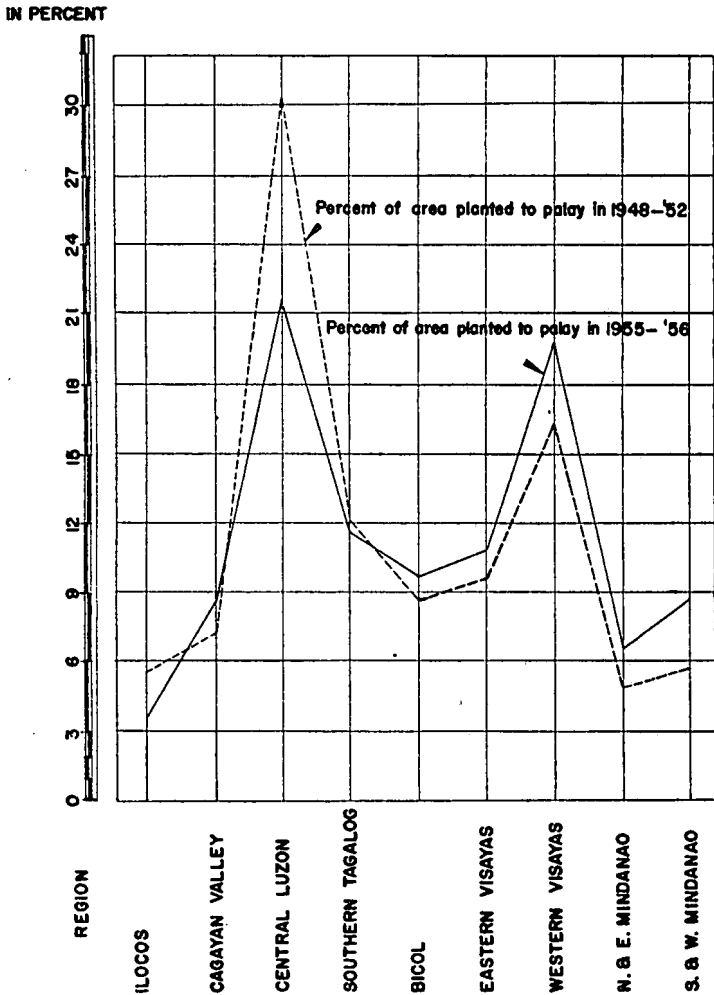
CHANGE IN GEOGRAPHICAL PATTERN OF RICE PRODUCTION BASED ON THE AREA PLANTED IN EACH REGION IN 1938-42 & 1955-1956



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CHANGE IN GEOGRAPHICAL PATTERN OF RICE PRODUCTION BASED ON THE AREA PLANTED IN EACH REGION IN 1948-1952 & 1955-56



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Tagalog also has declined relatively from prewar but by 1.9% only. Another region that has declined is Ilocos. This region had 5.41% of the area planted to rice before the war but last year, it has only 3.48%. The aggregate reduction of the three regions is 12.89%. To the extent of this combined reduction, the six other regions combined increased relatively in rice area. Western Visayas shows the greatest increase of 4.44%; Southern and Western Mindanao has increased by 3.28%; Bicol, by 1.92%; Eastern Visayas, by 1.83%; and the Cagayan Valley, by only 0.59%. The increase in Western Visayas may be explained largely by the conversion of prewar sugar lands into rice lands. Since Southern and Western Mindanao has still a much wider area that could be put under rice cultivation than any other underdeveloped region in the country, and since Western Visayas has but a comparatively limited area for the same purpose, it may be expected that the former will soon outstrip the latter in its rate of rice-area expansion.

To get a better view of the geographical pattern of rice production in this country, not only the total area planted but also the corresponding amount of production must be studied with respect to the different regions. It is clear, however, that just as Central Luzon, Southern Tagalog and Western Visayas, on the basis of area, are the three leading rice regions of the country, so are these same regions on the basis of the amount of their respective production of the cereal. Eastern Visayas is the fourth most important rice region on the basis of area but not on the basis of production. Of the total production of the country last year, only 9.29% was produced in Eastern Visayas or 0.53% less than was produced in Southern and Western Mindanao. It should be noted, too, in this connection that before the war, Eastern Visayas in point of production was but fifth among the nine regions in the production of rice. The Cagayan Valley ranked fourth then although this region last year lagged in production even behind that of Eastern Visayas by 0.37%. The three least important regions in point of production are Northern and Eastern Mindanao, Bicol and Ilocos. These are the same regions that are least important also in point of area planted to rice. The increasing importance of Southern and Western Mindanao as a rice producing region is

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more clearly seen from the standpoint of actual production than on the basis of area. Thus, the production of the region has increased relative to the other regions since prewar by 4.34% compared with the relative increase in its area planted to the cereal by only 3.28%

National and Regional Yields of Palay per Hectare

An important information in connection with the geographical pattern of rice production is productivity per hectare. The yield per hectare varies considerably with the different regions but one thing that should be noted first is whether the yield per hectare is increasing or decreasing in any region. If it is increasing, it may be a sign of progress in the development of the rice industry in the country. The progress may be in the form of increased irrigation facilities, better farm practices, increased application of fertilizers or more effective control of plant pests and diseases. On the other hand, a decrease in yield may indicate exhaustion of soil fertility or lack of efforts in the improvement of farm practices and in other things that could be done which would increase the yield per hectare.

For the whole country before the war, the 5-year average yield in the period, 1938-1942, was 24.52 cavans of palay (Table 10). This increased to the 5-year average of 26.13 cavans in 1948-1952. Last year, the national average was 27.13 cavans (Table 10). It is thus clear that the yield per hectare is increasing and there are indications that it will continue to increase.

Already on the basis of the latest forecast of palay production, the overall national yield per hectare this crop year will be more than 27.5 cavans of palay. Last year, the national average yield was 10.64% higher than prewar (1938-1942). On the basis of this year's last crop forecast, the yield will be greater by 12.4% over prewar (Table 12).

Referring to the different regions of the country, only three regions show decreases in yield from prewar levels: They are, namely, Ilocos showing a decline to 97.4% from prewar, Bicol to the level of 97.79%, and Western Visayas, to as low as

PHILIPPINE STATISTICIAN — SEPTEMBER, 1957

TABLE 10.—Palay: Yield per hectare, by region, for the crop years 1938-42, 1948-52, 1955-56 and 1956-57,^a Philippines.

Region	1938-42	1948-52	1955-56	1956-57 ^a
	<i>Cavans</i>	<i>Cavans</i>	<i>Cavans</i>	<i>Cavans</i>
Philippines	24.52	26.13	27.13	27.56
Ilocos	26.53	26.62	25.84	27.57
Cagayan Valley	24.78	28.38	28.38	28.37
Central Luzon	30.50	28.18	36.51	36.69
Southern Tagalog	18.36	23.03	25.22	25.20
Bicol	20.78	22.77	20.32	20.37
Eastern Visayas	19.36	23.50	23.42	24.70
Western Visayas	22.30	24.77	20.16	20.57
Northern and Eastern Mindanao	23.33	27.59	31.27	31.66
Southern and Western Mindanao	24.88	30.55	30.69	30.87

^a Forecast as of January 1, 1957.

TABLE 11.—Palay: Index numbers of yield, by region, (Philippines = 100)

Region	1938-42	1948-52	1955-56	1956-57 ^a
Philippines	100.00	100.00	100.00	100.00
Ilocos	108.20	101.88	95.25	100.04
Cagayan Valley	101.06	108.61	104.61	102.94
Central Luzon	124.39	107.85	134.57	133.13
Southern Tagalog	74.88	88.14	92.96	91.44
Bicol	84.75	87.14	74.90	73.91
Eastern Visayas	78.96	89.93	86.33	89.62
Western Visayas	90.95	94.80	74.31	74.64
Northern and Eastern Mindanao	95.15	105.59	115.26	114.88
Southern and Western Mindanao	101.47	116.92	113.12	112.01

^a Based on January 1 forecast of 1957 production.

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90.4%. All the six other regions show increases over prewar levels. Southern Tagalog, increased last year by 37.36% over prewar, Northern and Eastern Mindanao, increased by 34.03%; Southern and Western Mindanao, by 23.35%; Eastern Visayas, by 20.97%; Central Luzon by 19.70%; and Cagayan Valley by 14.53% (Table 12). It is interesting to note in this connection that while Central Luzon and Southern Tagalog have declined in importance as rice producing regions on the basis of total area planted, they have shown increases in yield per hectare. Of those regions that have increased in area planted, only Bicol and Western Visayas have shown decreases in yield. All other regions having increased in area planted also increased in yield. Only Ilocos of all the regions show a decrease in yield as well as a decrease in area planted from prewar levels (1938-1942).

Let us now look at the average yield per hectare in each region compared with the national average yield. As we have seen, the national average yield last year was 27.13 cavans of palay (Table 10). There were only four regions that exceeded the national average last year, namely, Central Luzon, whose yield was 34.56% above the national average; Northern and Eastern Mindanao which exceeded the national average by 15.26%; Southern and Western Mindanao which exceeded same by 13.12%; and the Cagayan Valley, by 4.61%. Thus, Central Luzon of the nine regions had the highest yield per hectare. Below the national average were Ilocos at the level of 95.25%; Eastern Visayas, at 86.33%; Bicol, at 74.09%; and Western Visayas at 74.31%.

Regional Surpluses and Deficiencies

The expected condition of the supply of rice cannot be determined with any degree of precision at any time of the year unless, at least, a rough estimate of the rice consumption requirement of the region along with its production is known. Unfortunately, it is this part of the study where information is not as adequate as desired. For the present, we are able to make an estimate of the consumption requirement in each region and province on the basis only of the estimated percent-

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TABLE 12.—Palay: Index numbers of yield, by region
(1938-42 = 100)

Region	1938-42	1948-52	1955-56	1956-57 ^a
Philippines	100.00	106.57	110.64	112.40
Ilocos	100.00	100.34	97.40	103.92
Cagayan Valley	100.00	114.53	114.53	114.49
Central Luzon	100.00	92.39	119.70	120.30
Southern Tagalog	100.00	125.44	137.36	137.25
Bicol	100.00	109.58	97.79	98.03
Eastern Visayas	100.00	121.38	120.97	127.58
Western Visayas	100.00	111.08	90.40	92.24
Northern and Eastern Mindanao	100.00	118.26	134.03	135.71
Southern and Western Mindanao	100.00	122.79	123.35	124.08

^a Based on January 1 forecast of 1957 production.

TABLE 13. — Palay: Quantity of monthly production available for human consumption, by region, Philippines, 1956
(In thousand cavans)

Region	Total production	Total production available for human consumption	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Philippines	74,393.90	69,936.83	1,513.88	3,171.20	3,897.70	10,848.36	13,137.74	12,407.00	10,133.84	3,708.85	3,394.47	5,213.88	1,088.96	1,420.95
Manila	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ilocos	2,467.40	2,351.04	—	34.31	160.40	299.54	529.26	1,020.34	173.05	67.07	—	13.42	33.54	20.11
Cagayan Valley	6,640.20	6,288.27	474.06	341.04	430.09	152.23	343.17	391.89	1,031.17	1,257.81	861.49	796.62	—	208.70
Central Luzon	21,494.60	20,418.15	130.61	195.74	149.28	1,575.50	5,958.04	6,177.77	4,046.31	854.53	731.99	232.93	237.03	128.42
Southern Tagalog	8,073.70	7,502.32	68.25	603.24	1,025.95	1,271.75	647.35	1,222.63	807.62	560.45	287.61	291.45	215.77	500.25
Bicol	5,159.60	4,769.02	358.27	127.81	248.25	651.24	751.65	326.93	735.85	431.47	350.22	561.90	136.67	88.76
Eastern Visayas	6,909.00	6,362.57	—	—	52.28	2,027.83	619.50	74.52	87.56	10.44	546.33	2,488.23	180.99	274.89
Western Visayas	11,035.30	10,354.42	—	46.38	723.56	3,319.78	1,972.45	1,805.98	1,936.58	181.27	264.21	104.21	—	—
Northern and Eastern Mindanao	5,308.20	4,963.59	239.58	537.30	687.93	356.88	381.96	675.05	380.62	326.75	342.86	702.39	243.99	88.28
Southern and Western Mindanao	7,305.90	6,927.45	243.11	1,285.38	419.96	1,193.61	1,934.36	711.89	935.03	19.06	9.76	22.73	40.97	111.54

TABLE 14. — Palay: Monthly consumption requirement by region, Philippines, 1956

Region	Total	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Philippines	71,319,530	5,943,298	5,943,298	5,943,298	5,943,298	5,943,298	5,943,298	5,943,298	5,943,298	5,943,298	5,943,298	5,943,300	5,943,300
Manila	7,399,860	616,655	616,655	616,655	616,655	616,655	616,655	616,655	616,655	616,655	616,655	616,655	616,655
Iloos	3,797,920	316,494	316,494	316,494	316,493	316,493	316,494	316,493	316,493	316,493	316,493	316,493	316,493
Cagayan Valley	3,048,110	254,009	254,009	254,009	254,009	254,009	254,009	254,009	254,009	254,009	254,009	254,010	254,010
Central Luzon	12,536,390	1,044,699	1,044,699	1,004,699	1,044,700	1,044,700	1,044,699	1,044,699	1,044,699	1,044,699	1,044,699	1,044,699	1,044,699
Southern Tagalog	11,047,860	920,655	920,655	920,655	920,655	920,655	920,655	920,655	920,655	920,655	920,655	920,655	920,655
Bicol	5,814,710	484,559	484,559	484,559	484,559	484,559	484,559	484,559	484,559	484,559	484,559	484,560	484,560
Eastern Visayas	7,443,990	620,332	620,332	620,332	620,332	620,332	620,332	620,333	620,333	620,333	620,333	620,333	620,333
Western Visayas	10,478,150	873,179	873,179	873,179	873,179	873,179	873,179	873,179	873,179	873,179	873,179	873,180	873,180
Northern and Eastern Mindanao	4,436,520	369,210	369,210	369,210	369,210	369,210	369,210	369,210	369,210	369,210	369,210	369,210	369,210
Southern and Western Mindanao	5,322,070	443,506	443,506	443,506	443,506	443,506	443,506	443,506	443,506	443,506	443,506	443,505	443,505

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age of the number of rice-eating people in 1939 as revised by a technical committee headed by Dr. Manuel L. Roxas in 1949. The validity of the estimate rests on the assumption that there has not been an appreciable change in the rice consumption pattern of the country since 1949.

For our purposes in this connection, the amount of the estimated part of the harvest that goes for seed, animal feeds and other uses and also that which is allowed for waste are subtracted from the production. The remainder is what is taken as available for human consumption. The monthly consumption requirement is assumed to remain the same every month of the year.

For the whole country in the month of July, only 25.47% of the monthly consumption requirement is satisfied out of the harvest of the month (Table 16). In August the harvest becomes 53.36% adequate and in September it attains 65.58% adequacy. Thus with the increase of the monthly harvest, it becomes increasingly adequate towards October when the amount available for human consumption out of the harvest exceeds the requirement by 82.53%. The surplus increases to 121.05% in November, falls off to 108.76% in December and finally to only 70.51% in January. Beginning in February, the monthly harvest falls considerably below the January level so that only 62.40% of the requirement of the month is satisfied; only 57.11% of it is satisfied during March; 87.73% in April; 18.32% in May; and 23.91% in June (Table 16).

Let us now turn our attention to the deficit and surplus months in each of the regions. Let us begin with Ilocos which produces only 61.90% of its total requirement during the year. The months of surplus in this region are November and December (Table 16). The amount available of the harvest during November exceeds the requirement by 67.56%. In December, the surplus is 223.04% (Tables 16 and 18). As we have noted elsewhere, no harvests are reported for July and March from this region, which means that during these months, Ilocos is 100% short of its requirement. The monthly requirement is but partially satisfied out of the harvest of the month at the low levels of 10.86% in August, 21.23% in February,

Table 15. — Palay: Monthly surpluses and deficits of production available for human consumption, by region, Philippines, 1956

Region	Total Production	Total			July	August	September	October
		Production available for human consumption	Consumption requirement	Surpluses and/or deficits				
Philippines ...	74,393,900	69,936,830	71,319,580	(1,382,750)	(4,429,418)	(2,772,098)	(2,045,598)	4,905,062
Manila	—	—	7,399,860	(7,399,860)	(616,655)	(616,655)	(616,655)	(616,655)
Ilocos	2,467,400	2,351,040	3,797,920	(1,446,880)	(316,494)	(282,184)	(156,094)	(16,953)
Cagayan Valley ...	6,640,200	6,288,270	3,048,110	3,240,160	220,051	87,031	176,081	(101,779)
Central Luzon	21,494,600	20,418,150	12,536,390	7,881,760	(914,089)	(848,959)	(895,419)	530,800
Southern Tagalog ..	8,073,700	7,502,320	11,047,860	(3,545,540)	(852,405)	(317,415)	105,295	351,095
Bicol	5,159,600	4,769,020	5,814,710	(1,045,690)	(126,289)	(356,749)	(236,309)	166,681
Eastern Visayas ..	6,909,00	6,362,570	7,443,990	(1,081,420)	(620,332)	(620,332)	(568,052)	1,407,498
Western Visayas ..	11,035,300	10,354,420	10,478,150	(123,730)	(873,179)	(826,799)	(149,619)	2,446,601
Northern and Eastern Mindanao	5,308,200	4,963,590	4,430,520	533,070	(129,630)	168,090	318,720	(12,330)
Southern and Western Mindanao	7,305,900	6,927,450	5,322,070	1,605,380	(200,396)	841,874	(23,546)	750,104

Table 15.—Palay: Monthly surpluses and deficits of production available for human consumption, by region, Philippines, 1956—Continued

Region	November	December	January	February	March	April	May	June
Philippines ...	7,194,442	6,463,702	4,190,542	(2,234,448)	(2,548,828)	(729,418)	(4,854,340)	(4,522,350)
Manila	(616,655)	(616,655)	(616,655)	(616,655)	(616,655)	(616,655)	(616,655)	(616,655)
Ilocos	212,767	703,846	(143,443)	(249,423)	(316,493)	(303,073)	(282,953)	(296,383)
Cagayan Valley ..	89,161	137,881	777,161	1,003,801	607,481	542,611	(254,010)	(45,310)
Central Luzon	4,913,340	5,133,071	3,001,611	(190,169)	(312,709)	(811,769)	(807,669)	(916,279)
Southern Tagalog .	(273,305)	301,975	(113,035)	(360,205)	(633,045)	(629,205)	(704,885)	(420,405)
Bicol	267,091	(157,629)	251,291	(53,089)	(134,339)	77,341	(347,890)	(395,800)
Eastern Visayas ..	(832)	(545,812)	(532,773)	(609,893)	(74,003)	1,867,897	(439,343)	(345,443)
Western Visayas ..	1,099,271	932,801	1,063,401	(691,909)	(608,969)	(768,969)	(873,180)	(873,180)
Northern and Eastern Mindanao ...	12,750	305,840	11,410	(42,460)	(26,350)	333,180	(125,220)	(280,930)
Southern and Western Mindanao ...	1,490,854	268,384	491,574	(424,446)	(433,746)	(420,776)	(402,535)	(331,965)

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Table 16.—Palay: Ratio of monthly production available for human consumption to the consumption requirement of the month, by region, Philippines, 1956

Region	Annual Average	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Philippines	98.06	25.47	53.36	65.58	182.53	221.05	208.76	170.51	62.40	57.11	87.73	18.31	23.91
Manila	—	—	—	—	—	—	—	—	—	—	—	—	—
Ilocos	61.90	—	10.85	50.78	94.83	167.56	323.04	54.79	21.23	—	4.25	10.62	6.37
Cagayan Valley	206.30	186.63	134.26	169.32	59.93	135.10	154.28	405.95	495.17	339.15	313.61	—	82.16
Central Luzon	162.87	12.50	18.74	14.29	150.81	570.31	591.34	387.32	81.80	70.07	22.30	22.69	12.29
Southern Tagalog ..	67.91	7.41	65.52	111.44	138.13	70.31	132.80	87.72	60.87	31.24	31.66	23.44	45.34
Bicol	82.02	73.94	26.38	51.23	134.40	155.12	67.47	151.86	89.04	72.28	115.96	23.20	18.32
Eastern Visayas	85.47	—	—	8.45	326.89	99.87	12.01	14.12	1.68	88.07	401.11	29.18	44.31
Western Visayas ...	98.82	—	5.31	82.86	380.19	225.89	206.83	221.78	20.76	30.26	11.93	—	—
Northern and Eastern Mindanao	112.03	64.89	145.53	186.32	96.66	103.45	182.84	103.09	88.50	92.86	190.24	66.08	23.91
Southern and Western Mindanao	130.16	54.82	289.82	94.69	269.13	436.15	160.51	210.84	4.30	2.20	5.13	9.24	25.15

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4.25% in April, 10.62% in May and 6.37% in June (Table 16). The monthly harvests in the other deficit months are 50.78% sufficient in September, only 5.17% short in October, and 54.79% sufficient in January.

The Cagayan Valley produces rice in excess of its whole year's requirement by 106.30% (Table 18). Its months of surplus are July with 86.63%; August with 34.26%; September with 69.32%; November with 35.10%; December, 54.28%; January, 305.95%; February, 395.17%; March, 239.15%; and April, 213.61%. It will be remembered that no harvest is reported for May from this region. It is in October and June when the amounts available for human consumption out of the harvests are short of the monthly consumption requirements by 40.07% and 17.84% respectively.

Central Luzon produces rice exceeding its own requirement by 62.87%. Its months of surplus are October with 50.81%; November with 470.31%; December with 491.34%; and January with 287.32%. The monthly requirement is supplied out of the harvest of the month to the extent of 81.80% in February; 70.07% in March; only 22.3% in April; 22.69% in May; 12.29% in June; 12.50% in July; 18.74% in August; and 14.29% in September (Table 16).

Southern Tagalog like Ilocos is a deficit region. It produces only 67.91% of its requirement. Its months of surplus are September with 11.44%; October with 38.13%; and December with 32.80%. The region supplies its requirement for human consumption to the extent of only 7.41% in July; 65.52% in August; 70.31% in November; 87.72% in January; 60.87% in February; 31.24% in March; 31.66% in April; 23.44% in May; and 54.34% in June.

The rice production of Bicol is only 82.02% adequate for its own requirement. Its months of surplus are October with 34.40%; November with 55.12%; January with 51.86%; and April with 15.96%. The monthly harvest provides only 26.38% of the monthly requirement of the region in August; 28.20% in May; and 18.32% in June. The harvest is short of the requirement by only 26.06% in July; by 48.77% in September;

TABLE 17.—Palay: Percentage extent of deficiency of the monthly harvest,
by region, Philippines, 1956^a

Region	Annual Average	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Philippines	1.94	74.53	45.64	34.42	—	—	—	—	37.60	42.89	12.27	81.68	76.09
Manila	100.00	100.00	100.00	100.22	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Ilocos	38.10	100.00	89.14	49.22	5.17	—	—	45.21	78.77	100.00	95.75	89.38	93.63
Cagayan Valley	—	—	—	—	40.07	—	—	—	—	—	—	100.00	17.84
Central Luzon	—	87.50	81.26	85.71	—	—	—	—	18.20	29.93	77.70	77.31	87.71
Southern Tagalog ..	32.09	92.59	34.48	—	—	29.69	—	12.28	39.13	68.76	68.34	76.56	45.66
Bicol	17.98	26.06	73.62	48.77	—	—	32.53	—	10.56	27.72	—	71.80	81.68
Eastern Visayas ...	14.53	100.00	100.00	91.57	—	0.13	87.99	85.88	98.32	11.93	—	70.82	55.69
Western Visayas ..	1.18	100.00	94.69	17.14	—	—	—	—	79.24	69.74	88.07	100.00	100.00
Northern and Eastern Mindanao	—	35.11	—	—	3.34	—	—	—	11.50	7.14	—	33.92	76.09
Southern and Western Mindanao	—	45.18	—	5.31	—	—	—	—	95.70	97.80	94.87	90.76	74.85

TABLE 18.—Palay: Percentage extent of the surplus of the harvest,
by region, Philippines, 1956^a

Region	Annual Average	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Philippines	—	—	—	—	82.53	121.05	108.76	70.51	—	—	—	—	—
Manila	—	—	—	—	—	—	—	—	—	—	—	—	—
Ilocos	—	—	—	—	—	67.56	223.04	—	—	—	—	—	—
Cagayan Valley	106.30	86.63	34.26	69.32	—	35.10	54.28	305.95	395.17	239.15	213.61	—	—
Central Luzon	62.87	—	—	—	50.81	470.31	491.34	287.32	—	—	—	—	—
Southern Tagalog	—	—	—	11.44	38.13	—	32.80	—	—	—	—	—	—
Bicol	—	—	—	—	34.40	55.12	—	51.86	—	—	15.96	—	—
Western Visayas	—	—	—	8.43	226.89	—	—	—	—	—	301.11	—	—
Eastern Visayas	—	—	—	—	280.19	125.89	106.83	121.78	—	—	—	—	—
Northern and Eastern Mindanao	12.03	—	45.53	86.32	—	3.45	82.84	3.09	—	—	90.24	—	—
Southern and Western Mindanao	30.16	—	189.82	—	169.13	336.15	60.51	110.84	—	—	—	—	—

^a Based on the estimated requirement.

32.53% in December; 10.96% in February; and by 27.72% in March (Table 17).

Eastern Visayas is another deficit region producing only 85.47% of its own requirement. It should be remembered in this connection that no harvests are reported for July and August from this region. Its months of surplus are only October with 226.89% and April with 301.11%. The harvest is practically sufficient to meet the requirement of the region in November. In March, the requirement is 88.07% satisfied out of the harvest of the month. The harvest is short of the requirement by 91.57% in September; by 87.99% in December; 85.88% in January; 98.32% in February; 70.82% in May; and by 55.69% in June (Table 17).

Western Visayas is practically self-sufficient, having produced 98.82% of its requirement in 1956. As has been stated earlier no harvests are reported from the region in May, June and July. The months of surplus in the region are October with 280.19%; November with 125.89%; December with 106.83%; and January with 121.78% (Table 16). The harvest provides far short of the requirement by 94.69% in August; 79.24% in February; 69.74% in March; and 88.07% in April. In September, the harvest is only 17.14% short of the requirement (Table 17).

Northern and Eastern Mindanao produces a surplus of hardly over 12%. It has surpluses of 45.53% in August; 86.32% in September; 3.45% in November; 82.84% in December; 3.09% in January, and 90.24% in April. The harvest provides but 96.66% of the requirement in October; 88.50% of it in February; and 92.86% of it in March. The harvest falls short of the requirement by 35.11% in July; by 33.92% in May; and by 76.09% in June (Table 17).

Southern and Western Mindanao produces a surplus of 30.16% of its requirement. The months of surplus are August with 189.82%; October with 169.13%; November with 336.15%; December with 60.15%; and January with 110.84%. The harvest is 5.31% short of meeting the requirement of the month in September. In July, the harvest provides only 54.82% of the requirement. In the other deficit months, the harvest

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provides but a fraction of the requirement at the low levels of 4.30% in February; 2.20% in March; 9.24% in April; 5.13% in May; and at 25.15% in June (Table 16).

Surpluses and the Amount of Palay and/or Rice Entering the Channels of Trade

At first thought, the indicated surplus in any region may be assumed to coincide more or less with the amount estimated as entering the channels of trade. It cannot be so for a number of reasons. Actually, even in deficit regions, the amount of the production entering the channels of trade ranges from around 21% to about 26%. To avoid confusion, distinction must be made between the aggregate surplus of the producers and the regional surplus. The regional surpluses in 1956 aggregated to 13,260,370 cavans of palay. All this may be assumed to have entered the channels of trade. This is only 57.07% of 23,234,703 cavans of palay that was estimated to have passed to the consumers through market channels in 1956. This is because whether there is a regional surplus or not, a great many of the producers may always have some surplus to dispose of in the market.

However, it becomes somewhat of a puzzle to note that the Cagayan Valley had as much surplus as 3,240,160 cavans of palay in 1956 when the estimated part of its production that entered the channels of trade was only 1,992,268 cavans or 61.49% of the estimated regional surplus. Assuming that the estimated consumption requirement of the Cagayan Valley on which the estimation of the regional surplus has been based, is correct, this, still can be explained. In estimating the amount entering the channels of trade, the amounts given away by the farmer in exchange for services are not included. The most important of these services are harvesting, threshing and hauling. If the amounts paid in kind for these services are included, not to speak of what the farmer may dispose of in the market out of his estimated carry-over of around 19%, the gap between the regional surplus and the estimated amount entering the market is reduced to insignificance.

*Stabilization of the Supply Through More Even Seasonal
Distribution of Production Throughout the Year*

We have seen that the main palay harvest season of the country is from October through January when 66.4% of the total palay crop of the country is harvested and that the season of scarcity lasts from July through October. It has been noted, however, that the Mindanao regions have comparatively heavy harvests in August and September. These regions are possessed still of wide areas suitable for rice cultivation. Their production of the cereal, therefore, should be encouraged during these two months. The encouragement may be extended to include the month of July since the harvest during this month in the same regions is not insignificant. This should mean increased planting of the cereal during April, May and June so that more of it will be harvested during the next three months. Somewhat heavy harvest is also reported from Bicol in July so that this region contributes as much as 24.05% of the country's harvest during this month. As we have seen, however, the heaviest contribution of 31.06% of the country's harvest in July comes from the Cagayan Valley. To increase rice production in July in the Cagayan Valley and in Bicol would help considerably in any effort to abolish or, at least, minimize scarcity during the first four months of the crop year. It may be possible also to increase considerably the production of rice in the month of June, especially in Southern Tagalog, in Eastern Visayas and, again, in the Cagayan Valley, these three regions being the heaviest contributors to the country's total harvest of palay in June.

Price Stabilization and Local Procurement of Supply

With the expected amount of the supply in a region more or less known on the basis of its production and consumption requirement for any month or period, it should be possible for any price stabilization agency to adopt a procurement and sales-distribution policy that will benefit to the maximum the producers as well as the consumers. In certain places or regions, however, much more should be known than the likely amounts of the production and consumption. It is perfectly possible

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that because of certain practices of landlords and local palay and rice dealers, the supply may become scarce in a normally "surplus" region. *Scarcity in the midst of plenty* is a situation that may result from a great many of the tenants being allowed to retain but a small portion of their production as share after "liquidation" which is utterly inadequate to meet their own consumption requirement. This has often happened in Central Luzon in the past.

A "surplus" area could actually become a deficit area if the palay dealers, taking advantage of the normally low price in the place, buy plenty of the local produce, and ship it out for hoarding in another place and sell it later in normally deficit areas.

The procurement and sales-distribution policy of those who would stabilize the price of the cereal should be such as will, in its implementation, discourage in any place the monopolistic practices of dealers and middlemen and even of landlords who somehow manage to gain possession and control of the major part of the local production. The policy at the same time should encourage more production in certain regions during the months of June, July and August. Such regions are those of Mindanao, the Cagayan Valley, Bicol, Southern Tagalog and Eastern Visayas all of which enjoy either a type of climate that has only a short dry season or one with rainfall more or less evenly distributed throughout the year. In some places of these regions, especially those bordering the Pacific Ocean, the climate may be one without a dry month and with some three months of more or less continuous heavy rains.

SUMMARY AND CONCLUSION

There is not a single month of the year when palay harvest does not take place in the Philippines. This is also true of such regions as Central Luzon, Southern Tagalog, Bicol, Northern and Eastern Mindanao and Southern and Western Mindanao. There are, however, but negligible monthly harvests in Central Luzon during six months from April to September; also in Southern Tagalog during the months of May and July; in Bicol, during May, June and August; in Northern and Eastern Mindanao during June; and in Southern and Western Mindanao during February, March, April, May and June. No

harvests are reported from Ilocos for the month of July and March and but negligible ones for the months of April, May and June. Likewise no harvest is reported for May from the Cagayan Valley; and from Eastern Visayas, for the months of July and August and but negligible ones for September, December, January and February. From Western Visayas, only light harvests are reported for the months of August, February and April and none for May, June and July.

The main harvest season of the whole country when 66.4% of the crop is harvested, lasts for four months from October through January. During this same season, the amount of crop harvested in Ilocos is around 86% of the total crop of the region; in Central Luzon, almost 87%; in Western Visayas, a little over 87%; in Southern and Western Mindanao about 69%; in Southern Tagalog, about 53%; and in Bicol, about 52%. The three remaining regions harvest less than 50% of their crop during the main harvest season of the country.

During the first quarter of the crop year from July through September, 12.29% of the total year's crop of the country is harvested and 51.94% of it during the second quarter. In other words, by the end of the calendar year, 74.23% of the entire palay crop of the country has been harvested. The third and fourth quarters contribute respectively 24.61% and 11.16% to the national harvests of the country.

The national yield per hectare of rice has increased from a five-year average of 24.52 cavans of palay before the war to more than 27 cavans at present. The three regions of Ilocos, Bicol and Western Visayas show decreases in yield from prewar levels by 2.6%, 2.21% and 9.6% respectively. All the six other regions have increased in yield from prewar levels, the most notable increases being as much as 37.36% in Southern Tagalog, 34.03% in Northern and Eastern Mindanao and 23.35% in Southern and Western Mindanao.

The regions producing in excess of their consumption requirement are Central Luzon with a surplus of 106.3%; the Cagayan Valley, with 62.87%; Southern and Western Mindanao, with 30.16%; and Northern and Eastern Mindanao with 12.03%. Western Visayas is practically self-sufficient in rice.

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The consumption requirement has been estimated on the basis of the percentage of rice-eating people in 1939 as revised by a technical committee, headed by Dr. Manuel L. Roxas in 1949. The validity of the estimate rests on the assumption that there has not been an appreciable change in the rice consumption pattern of the country since 1949.

The most important rice-producing regions are still the same as before the war: Central Luzon, contributing more than one fourth of the national production; Western Visayas, around one seventh; and Southern Tagalog, about one eleventh. Since prewar, however, the region of Southern and Western Mindanao has increased considerably in importance and the same thing can be said of Eastern Visayas and Northern and Eastern Mindanao. Both of the former two are now contributing about 10% each to the national production¹. While Central Luzon is still the biggest rice-producing region, its relative importance has decreased since prewar by more than 9%.

The supply of rice may be stabilized through a more even seasonal distribution of production throughout the year. This may be brought about by encouragement of more production during the month of June, July, August and September in the regions of Mindanao, the Cagayan Valley, Southern Tagalog, Bicol and Eastern Visayas. It is during these four months that the rice supply is usually scarce in this country.

The procurement and sales-distribution policy of those who have to do with the stabilization of the price of the cereal should be such as will, discourage in any place the monopolistic practices of the dealers and middlemen and even of landlords who somehow manage to gain possession and control of the major parts of the local production in many rice-producing communities. The policy in its implementation should benefit to the maximum the producers as well as the consumers.

¹ Production of abnormal years should never be used as bases in making estimates with percentages produced in this study. These percentages, moreover, whenever applied to any figure representing an aggregate should not be expected to give results better than rough approximations.