

# A STUDY OF THE LIVING CONDITIONS OF FARMERS IN TAIWAN, 1931-1950\*

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A quantitative analysis is made herein of the Taiwanese farm household economy in 1931, 1937, 1941, and 1950. The results reveal (1) farm expenditure and income for all types of farmers in 1950 were less than in 1931, the only year for which comparable figures are available; (2) in 1950 both the consumption expenses for most farmers and Engel's Coefficient for all types of farmers showed inferior conditions for that year as compared to the earlier periods; (3) secondary living expenses in 1950 only amounted to two-thirds of those in the previous periods; (4) the poor situation in 1950 was caused by the decline of the rice price ratio and of cultivated area, which combined to offset the benefits derived from rent reduction for tenants, and (5) food expenses for all the periods, however, maintained a per capita annual level of 48-49 yen at the 1937 value.

## I. SOURCE MATERIALS USED

The principal source materials used in this paper are as follows:

1. Taiwan sōtokufu, Shokusan kyoku (Industrial Bureau of Taiwan Government-General), *Nōka keizai chōsa—Beisaku nōka* (Farmhousehold Economy Survey—Rice Growing Households), Taipei, 1934. (cited as *NKC*)
2. Taiwan sōtokufu, Shokusan kyoku (Industrial Bureau of Taiwan Government-General), *Beisaku nōka seikeihi chōsa: Nōgyō kihon chōsa dai 38* (Living Expenditure Survey of Rice Growing Households: Basic Survey of Agricultural Households No. 38), Taipei, 1938. (cited as *BNSC 38*)
3. Taiwan sōtokufu, Shokusan kyoku (Industrial Bureau of Taiwan Government-General), *Beisaku nōka seikeihi chōsa: Nōgyō kihon chōsa dai 48* (Living Expenditure Survey of Rice Growing Households: Basic Survey of Agricultural Households No. 48), Taipei, 1948. (cited as *BNSC 48*)
4. Provincial Government of Taiwan, Department of Agriculture and For-

\* This paper is a summary of an article of the same title, which was first published in *Shehui K'ohsueh Lunts'ung* (Journal of Social Science), No. 6 (May, 1955) by the Faculty of Law, Taiwan National University and later reprinted in *Taiwan Yinhang Chihk'an* (Quarterly Journal of the Bank of Taiwan), VIII-4 (December, 1956), Bureau of Economic Research, the Bank of Taiwan. It seems that the peasant economy in Taiwan has changed remarkably since 1951 and therefore the description and analysis of the new situation should be the tasks for another study. Indeed, the period 1950-51 was significant for both Taiwan economy as a whole and the living conditions of peasants in particular. In this sense, it is still appropriate to select the period 1950 as the end of a period in the study of Taiwanese peasant economy. It is for this reason that I am again making my work available this time in English in response to the request of the Institute of Developing Economies.

estry, *Nungchia Chingchi T'iaoch'a Paokaoshu* (Report on the Farmhousehold Economy Survey—Rice Growing Households), Taipei, 1952. (cited as *NCTP*)

*NCTP* is a report of a survey carried out applying the method employed in *NKC*. All the above four sources can be regarded as the results of similar successive surveys conducted on "household expenditures." Therefore, these four sources are valuable as fundamental materials for the study of Taiwanese farmhousehold living conditions during the period under study.

5. Arther P. Raper and others, *Rural Taiwan Problem and Promise*, Taipei, Joint Committee for Rural Reconstruction (JCRR), 1954. (cited as *RTPP*)
6. Taiwan sōtokufu, Shokusan kyoku (Industrial Bureau of Taiwan Government-General), *Taiwan shōkō tōkei* (Statistics of Commerce and Industry in Taiwan). (cited as *TSKT*)
7. Taiwan sōtokufu, Shokusan kyoku (Industrial Bureau of Taiwan Government-General), *Taiwan shōgyō tōkei* (Statistics of Commerce in Taiwan). (cited as *TSGT*)
8. Provincial Government of Taiwan, Bureau of Accounting and Statistics, *Taiwan Wuchia T'ungchi Yüehpao* (Monthly Bulletin of Commodity Prices in Taiwan). (cited as *TWTY*)
9. Provincial Government of Taiwan, Food Bureau, *Taiwan Liangshih T'ungchi Yaolan* (Handbook of Food Statistics in Taiwan). (cited as *TLTY*)
10. Provincial Government of Taiwan, Statistics Division, Food Bureau, *Taiwan Liangshih T'ungchi T'iyao* (Outline of the Statistics of Food in Taiwan). (cited as *TLTT*)
11. Provincial Government of Taiwan, *Taiwansheng 51 nien T'ungchi T'iyao* (Statistical Abstract of Taiwan for Fifty-one Years). (cited as *TWTT*)

## II. NUMBER OF FAMILY MEMBERS AND SCALE OF MANAGEMENT

As Column A of Table 1 shows, the average number of family members<sup>1</sup> of all farmhouseholds surveyed increased gradually during the period 1931–1950; i. e., from 9.30 persons in 1931 to 9.68 persons in 1937, 9.73 persons in 1941, and 9.84 persons in 1950. Notwithstanding a slight decrease in a few cases during this interval, a similar trend can be seen also in the number of family members of each type of farmer: owner, part-owner, and tenant. During the same period, the average number of productive workers per household declined from 4.00 persons in 1931 to 3.71 in 1950. This decline is common to every type of landholding. The number of persons to be supported by one adult male increased from 2.33 in 1931 to 2.65 in 1950.

<sup>1</sup> According to the sources, "family" is defined as consisting of the head of a household, members of his family, and other individuals, who live with him and belonging to the same household economic unit at the time when the survey was carried out. Therefore, it does not include any person who belonged to another household economic unit even if that person were related by blood to the head of the household in question.

These figures indicate that one characteristic of agricultural families in Taiwan in the period under study is the "decreasing number of productive workers and increasing number of dependents." This has long been an unfavorable condition to farmhousehold economy in Taiwan.

Table 1. Size and Composition of Farmhouseholds, 1931-1950

	1931 <sup>1)</sup>			1937 <sup>2)</sup>	1941 <sup>3)</sup>	1950 <sup>4)</sup>		
	A. <sup>1)</sup>	B.	C.	A.	A.	A. <sup>4)</sup>	B.	C.
Owner Farmers	9.44	3.81	2.78	10.20	10.02	10.21	3.60	2.66
Part-Owner Farmers	9.76	4.26	2.29	—	—	10.25	3.88	2.64
Tenant Farmers	8.71	3.96	2.20	9.12	9.45	9.14	3.71	2.46
Average*	9.30	4.00	2.23	9.68	9.73	9.84	3.71	2.65

Notes: \*Figures are geometric averages.

A. Number of family members, B. Number of adult males engaged in agriculture per household, C. Number of dependants per adult male (A/B)

Sources: Figures for Columns 1)-4) are calculated from *NKC*, *BNSC 38*, *BNSC 48*, and *NCTP* respectively.

Scale of management is the most important factor determining income and, thus, the economic conditions of farmhouseholds. Therefore, through an examination of the scale of management and any changes in it, we should be able to explain the changes in the farmhousehold economy.

The data in Table 2 suggest that contraction in the scale of management, closely related to the decrease in the number of adult males engaged in agriculture, has been one of the major causes of the declining conditions of the Taiwanese farmhousehold economy during the later years of the period.

Table 2. Changes in Acreage of Landholding

	(in Chia*)			
	1931	1937	1941	1950
Owner Farmers	3.36	2.40	2.47	2.22
Part-Owner Farmers	3.34	—	—	2.48
Tenant Farmers	3.04	2.48	2.54	1.93
Average	3.27	2.44	2.51	2.19

Note: 1 Chia=0.96992 hectares.

Sources: *NKC*, *BNSC 38*, *BNSC 48* and *NCTP*.

### III. GENERAL CONDITIONS OF FARMHOUSEHOLD ECONOMY

Taiwanese farming is conducted on a small-scale and is oriented to subsistence economy. Because farming has not yet developed into an enterprise, concepts and categories regarding capital, net income, etc. have not been established within the economy of Taiwanese peasants.

Gross revenue is the source from which household expenditures are directly appropriated and at the same time the most powerful determinant of level of expenditure. Emphasis is placed on household expenditures when

gross revenue is allocated. Indeed, the amount appropriated for household expenditures often exceeds that for farm expenditures. The fundamental structure of farmhousehold economy and the relationship among such categories as gross revenue, household expenditures, and so on can be expressed briefly by the formula:

$$GR - (HE + FE) = S \quad \text{where } GR = \text{gross revenue, } HE = \text{household expenditures,} \\ FE = \text{farm expenditures, and } S = \text{surplus or deficit.}$$

Applying this method of analysis, Tables 3 and 4 have been compiled from *NKC* and *NCTP*, for the purpose of expounding the general situation of and changes in peasant economy in Taiwan during the period 1931-1950.

**Table 3.** Income and Expenditure of Farmhouseholds in 1931

(at 1931 Taiwan yen)

	Gross Revenue	Household Expenditures	Farm Expenditures	Surplus
Owner Farmers	2,203.33	908.06	1,068.97	226.30
Part-Owner Farmers	1,621.57	592.93	849.32	179.31
Tenant Farmers	1,447.97	486.48	929.52	31.97
Average	1,748.71	667.58	946.87	145.86

Sources: Same as Table 2.

**Table 4.** Income and Expenditure of Farmhouseholds in 1950

(at 1950 Taiwan yen)

	Gross Revenue	Household Expenditures	Farm Expenditures	Surplus
Owner Farmers	17,104	8,904	6,165	1,945
Part-Owner Farmers	16,555	8,285	6,703	1,567
Tenant Farmers	14,942	7,077	6,713	1,152
Average	16,102	8,034	6,536	1,533

Sources: Same as Table 2.

In order to make a comparison between income and expenditure for 1931 and 1950, it is necessary to adjust for differences in commodity prices. Retail price indices in 1931 and 1950 (for March 1950-February 1951, when the survey was carried out) were 81.7 and 1,071.7 respectively, taking the first half of 1937 as the base. That is to say, purchasing power indices on retail markets for 1931 and 1950 were 1.223 (100/81.7) and 0.093 (100/1,071.7).

Table 5 presents the real incomes and expenses for 1931 and 1950 calculated at the 1937 value, multiplying the current incomes and expenses for the periods (cf. Tables 3 and 4) by 1.223 and 0.093 respectively. The ratios of the real values of each item with 1931 as the base indicate the relative situation for both periods.

Our findings from Table 5 are as follows:

- (1) Gross revenue of all types of farmhouseholds was smaller in 1950 than in 1931.
- (2) Household expenditures for part-owner and tenant farmers in 1950 were

**Table 5.** Comparison of Income and Expenditure Between 1931 and 1950  
(at 1937 Taiwan yen)

	Gross Revenue			Household Expenditures			Farm Expenditures			Surplus		
	1931	1950	Ratio	1931	1950	Ratio	1931	1950	Ratio	1931	1950	Ratio
Owner Farmers	2,694	1,588	50.9	1,112	831	74.7	1,308	575	44.8	277	182	65.7
Part-Owner Farmers	1,985	1,544	77.7	726	772	106.3	1,040	646	60.2	219	146	66.6
Tenant Farmers	1,772	1,394	78.6	595	660	110.9	1,138	627	55.1	39	107	271.8
Average	2,141	1,503	70.2	804	749	93.1	1,158	610	52.6	178	144	80.9

Note: *TSKT* (No. 18) states that the retail price index was 77.0 in 1931 and 94.2 in 1937 taking 1929 as the base year. If we take 1937 as the base year in order to make a comparison between 1931 and 1950, the price index for 1931 is 81.7 (77/94.2×100) [*TWTY* (Nos. 60 and 85)].

larger than those in 1931, but the difference between the two was not so great. In the case of owner farmers household expenditures in 1950 were less than in 1931. But the rate of decrease was less than that for gross revenue.

(3) Farm expenditures in 1950 were smaller than those in 1931 for all three types of farmers. The rates of decrease were larger than those for gross revenue.

(4) The surplus of tenant farmers in 1950 was larger than in 1931. In contrast, those of both owner and part-owner farmers were smaller than in 1931, though the rates of decline were not so large as those of household expenditures.

What do these facts imply and what are the causes of these phenomena?

(1) Since gross revenue is the source for every kind of expenditure and surplus, if other things remain unchanged, the diminution of gross revenue necessarily exerts unfavorable influences on every aspect of peasant economy. As has been stated above, the diminution of gross revenue was in turn closely connected with contraction of the scale of management and decrease in the number of productive adult males within a household.

The question of how far the yield per acre and changes in rice price are related to the decrease of gross revenue, will be examined in Table 8.

(2) In contrast to the decrease in gross revenue, household expenditures in 1950 increased for part-owner and tenant farmers. Although these expenditures decreased for owner farmers, the rate of decrease was not so large as that of gross revenue. These facts indicate an increase in the propensity to consume and suggest a relationship between these facts and a decrease in farm expenditures.

(3) A part of gross revenue which is allocated to farm expenditure for procuring future revenue, is usually used for fertilizer, fodder, and rent. The remarkable decrease in these expenditures was caused largely by the reduction of rent in 1949 to a maximum of 37.5% of crop value. Beside, it was related to the increase in propensity to consume and liquidity preference which will

be discussed below. This decrease in turn should bring about a fall in revenue for the succeeding period through the contraction of the scale of management, if other things remain unchanged.

(4) The so-called "surplus" is composed of that part of income reserved in the form of cash or grain for the purpose of future utilization and is a kind of liquid asset. For some farmers, the "surplus" increased in 1950, contrasting sharply to the heavy decrease in household expenditures. And in the case of other households whose "surplus" diminished, the rate of decrease was not so high as that of household expenditures. In this sense, the propensity to maintain liquidity or to avoid the freezing of funds seems to have been strengthened among farmers. This trend, combined with the decrease in farming expenditures, may result in a fall of revenue in the future, through the reduction of the scale of farming.

In short, the condition of the peasant economy in 1950 was partly more favorable as compared to that in 1931, as far as household expenditure was concerned. However, the future prospects on the whole became bleaker.

#### IV. PER FAMILY AND PER CAPITA HOUSEHOLD EXPENDITURES

The level of living is usually measured by the amount of household expenditures. Table 6 shows the changes in the amount of current household expenditures during the period under study.

**Table 6.** Annual Farmhousehold Expenditures per Family  
(at current value of the yen for each period)

	1931	1937	1941	1950
Owner Farmers	908.06	1,015.26	1,602.56	8,904.00
Part-Owner Farmers	592.98	—	—	8,295.00
Tenant Farmers	486.48	847.62	1,314.62	7,077.00
Average	657.58	934.54	1,456.48	8,034.00

Sources: For 1937 and 1941 *BNSC 38* and *BNSC 48*. For 1931 and 1950, see Tables 3 and 4.

With 1937 as the base year (=1), the purchasing power index of household expenditures for 1931, 1941 and 1950 is 1.223 (100/81.7), 0.625 (100/159.9), and 0.093 (100/1,071.7) respectively.

Table 7 presents the real household expenditures for each period, calculated by multiplying current household expenditures by the purchasing power index of each period. In this table the author has also included indices of these expenditures (figures in parentheses) in order to clarify the changes which took place.

As is seen in Table 7, the real farmhousehold expenditures of owner farmers, tenant farmers, and their average in 1950 decreased as compared to those for 1937 and 1941. On the other hand, both part-owner and tenant farmers' increased slightly in comparison with 1931. However, it must be

**Table 7.** Real Household Expenditures per Family (1931-50) Compared  
(at the constant value of 1937 Taiwan yen)

	1931	1937	1941	1950
Owner Farmers	1,111.41 (109)	1,015.26 (100)	1,002.20 (98)	831.00 ( 82)
Part-Owner Farmers	725.80 (100)*	—	—	774.00 (108)
Tenant Farmers	595.48 ( 64)	874.62 (100)	821.25 (97)	663.00 ( 71)
Average	804.87 ( 86)	934.54 (100)	910.87 (97)	749.00 ( 80)

Note: \*1931 is taken as the base year because the statistics for 1937 are not available.

noticed that this increase resulted not from the increase in gross revenue, but from the reduction of farm rent and the strengthening of the propensity to consume. The most noticeable phenomenon is that real household expenditures of tenant farmers in 1950 not only did not increase but even diminished by about 20-30% as compared with those in 1937 and 1941. Whether or not these changes reflect the reality of peasant household economy is worthy of careful examination. We may approach this question from two aspects. First is through an examination of the percentages occupied by the chief items in tenant farmers' household expenditures. Generally speaking, these percentages are closely related to the total amount of household expenditures. In cases where the amount of household expenditures is large, the percentage occupied by food or primary living expenses is lower, and that by non-food or secondary living expenses is higher. However, if the amount of household expenditures is small, the former will be higher and the latter will be lower. If the relative ranking in each period indicated by the proportion between the food and non-food or the primary and secondary living expenses corresponds to the relative volume of household expenditures, the results obtained concerning the comparative position of each period might be regarded as representing reality. In the following section we shall discuss the percentages of the chief expenses of tenant farmers along with the details of household expenditures of other types of farmers.

The second approach is to study the volume of gross revenue of each household. Such a study will also provide an appropriate check for the reliability of the real values of household expenditures presented above. The reason is that since the volume of gross revenue is a determinant of household expenditures, the changes in both gross revenue and expenditures are closely related.

Gross revenue of farmhousehold is composed of gross agricultural and non-agricultural income. A general estimation of non-agricultural income is extremely difficult because the amount of income from non-agricultural activities varies widely according to type of landholding. Agricultural income primarily derives from farming, and secondarily from raising of pigs. Because the income and scale of pig-raising usually change in congruence with those of farming, it is not inappropriate to let the index of farming income, which is easier to estimate, stand for the index of agricultural gross revenue as a whole.

Total real farming income is determined by such factors as acreage of

cultivated land, per hectare yield, price of unhusked rice, and retail commodity prices. The index of farming income for each period has been calculated in Table 8, using the rice price index instead of the index of unhusked rice. The latter has not been used because the statistics are defective and the change in the rice price index can be properly assumed to be parallel to that of unhusked rice.

**Table 8.** Index for Estimated Farming Income of Tenant Farmers

	1931	1937	1941	1950
A. Farm Acreage ( <i>Chia</i> ) <sup>1)</sup>	3.04	2.48	2.52	1.93
(index)	(123)	(100)	(102)	(78)
B. Yield per Hectare (kilogram) <sup>2)</sup>	1,707	1,994	1,894	1,909
(index)	(86)	(100)	(95)	(96)
C. Taipei Wholesale (yen) <sup>3)</sup>	6,734	12,760	16,958	97,794
Price of Rice (index)	(52.7)	(100)	(132.8)	(767.5)
(Middle grade rice per <i>Koku</i> ) <sup>4)</sup>				
D. Selling Price for Total Yield Index <sup>5)</sup>	55.75	100	128.68	574.70
E. Taipei Retail Commodity Price Index <sup>6)</sup>	81.7	100	159.9	1,071.7
F. Index for Real Value of Farming Income of Tenant Farmers <sup>7)</sup>	68.23	100	80.47	67.01

Notes: 4) Approximately 5 bushels.

5) Index of the products of the indices of Items A, B, and C. (1937=100)

7) Indices were calculated by applying the formulae below: for the 1950 period,  $[D \times (375/1,000)] \div E$  (Because the 375/1,000 rental rate was enforced in 1950) and for the former periods,  $[D \times (5/10)] \div E$ .

Sources: 1) Same as Table 2. 2) *TLTY* (1951). 3) For the periods 1931 and 1941, *TWTT*, p. 914, and for 1950, *TWTY* (Nos. 60 and 65). 6) Same as 3) above.

According to the above estimation the index of farming income of tenant households in 1950 (which also represents the index of agricultural gross return) is less than 70% of that in 1937, and 80% (67.01/80.47) as compared to 1941. The changes in real household expenditures for tenant farmers (Table 7) are so similar to these variations in the farming income index that the above comparative analysis of secular changes of household expenses may be considered as fairly reliable.

Table 8 demonstrates the fact that the most significant cause of the low level of farmhousehold income in 1950 is the decline of the rice price ratio on the commodity market. If we take 1937 as the base (=100), the index of this ratio is 83.2 (132.8/159.9) in 1941 and 71.6 (767.5/1,071.7) in 1950. Another important cause is the reduction of the area under cultivation. However, the influence of the diminution of per acre yield was rather weak because the yield in 1950 was restored to 96% of that in 1937. These factors together brought diminished income to tenant farmers in 1950 and made conditions worse than before, notwithstanding the enforcement of the 375/1,000 farm rent.

The above observations on household expenditures were made on the basis of per household figures. The results present hardly any problem because there was little difference in the number of family members for each period

under study (see Table 2). However, strictly speaking, it would be more appropriate to take per capita or per unit consumption as the standard, especially in the case of comparison with urban and other districts, where size and composition of the family are greatly different.

Although the "consumption unit" is usually calculated in terms of the Atwater Scale, the division by age adopted in the surveys carried out in Taiwan was different. Therefore, it is impossible to calculate "consumption unit" in accord with the Atwater Scale. For this reason, we calculated per capita household expenses in place of the Atwater unit, on the basis of household expenditure per family (Table 6) and the number of family members (Table 1).

**Table 9.** Per Capita Annual Household Expenditures among Farmers  
(at 1937 Taiwan yen)

		1931	1937	1941	1950
Owner Farmers	Real expenses	117.73	99.53	100.02	81.46
	Index	(118.28)	(100)	(100.49)	(81.84)
Part-Owner Farmers	Real expenses	74.37	—	—	75.32
	Index	(100)			(101)
Tenant Farmers	Real expenses	68.37	92.93	86.89	72.54
	Index	(92.56)	(100)	(93.50)	(78.06)
Average	Real expenses	86.55	96.54	93.52	76.11
	Index	(89.64)	(100)	(96.87)	(78.84)

According to Table 9 the changes in per capita real consumption expenditures closely resemble those observed in per household consumption expenditures. That is to say, per capita consumption expenditures in 1950 were about 20% lower than those in both 1937 and 1941 in the cases of both owner and tenant farmers, and as an average. Only when compared to 1931, those for tenant and part-owner farmers in 1950 show just a little improvement.

#### V. PERCENTAGES OF MAJOR ITEMS IN HOUSEHOLD EXPENDITURES—ENGEL'S LAW

Now let us investigate the details of household expenditures. First, we shall begin with an analysis of the allocation of expenditures for various purposes, i.e., a study of the value of each expense item and its percentage to total household expenditures.

In *NKC*, *BNSC 38*, and *BNSC 48*, expenditures are divided into two major categories: primary living expenses and secondary living expenses. The former consists of the five items of food, fuel & lighting, clothing, housing, and furniture. The latter includes the following nine items: medical and personal care, ceremonies, social expenses, incidental expenses (cigarette, wine, tea, etc.) taxes, education, recreation, culture, and other. In *NCTP*, categorization according to primary and secondary living expenses has not been made, but almost the all items mentioned above also appeared in this source. In other

words, the method of categorization employed in the former three sources was actually applied to *NCTP*. Therefore, the data in *NCTP* are comparable to those given in the former sources.

What is the real value of each item and what percentage does each item occupy in total household expenditures? In examining these questions the author has derived much benefit from Engel's Law, though aware of the limitations of its validity. According to Engel's last article, entitled "Die Lebenskosten belgischer Arbeiter-familien früher und jetzt" (1895) the major

**Table 10.** Household Expenditures and Percentages by Category  
(at current Taiwan yen for each period)

	Total Expenditures	Foods	Primary Living Expenses	Secondary Living Expenses
<b>THE 1931 PERIOD</b>				
Owner Farmers (Old yen)	908.06	424.64	576.65	331.41
(%)	100.00	46.76	63.50	36.50
Part-Owner Farmers (Old yen)	592.98	315.13	407.53	185.45
(%)	100.00	53.13	68.73	31.27
Tenant Farmers (Old yen)	486.48	267.29	335.81	150.67
(%)	100.00	54.94	69.03	30.97
Average (Old yen)	657.58	333.88	437.26	220.32
(%)	100.00	50.77	66.49	33.51
<b>THE 1937 PERIOD</b>				
Owner Farmers (Old yen)	1,015.26	507.33	666.87	348.39
(%)	100.00	49.97	65.68	34.32
Tenant Farmers (Old yen)	847.62	452.17	595.74	251.88
(%)	100.00	53.35	70.28	29.72
Average (Old yen)	934.54	480.77	632.62	301.92
(%)	100.00	51.44	67.69	32.31
<b>THE 1941 PERIOD</b>				
Owner Farmers (Old yen)	1,602.66	754.45	1,062.92	539.64
(%)	100.00	47.08	66.33	33.67
Tenant Farmers (Old yen)	1,314.02	694.76	957.15	358.17
(%)	100.00	52.87	72.74	29.26
Average (Old yen)	1,456.48	724.31	1,008.47	448.01
(%)	100.00	49.73	69.24	30.76
<b>THE 1950 PERIOD</b>				
Owner Farmers (New yen)	8,904.0	4,175.0	6,815.0	2,089.0
(%)	100.0	53.0	76.6	23.4
Part-Owner Farmers (New yen)	8,285.0	4,517.0	6,384.0	1,901.0
(%)	100.0	54.6	77.0	22.9
Tenant Farmers (New yen)	7,077.0	4,008.0	5,595.0	1,482.0
(%)	100.0	57.6	50.1	19.9
Average (New yen)	8,088.0	4,414.0	6,275.0	1,811.0
(%)	100.0	54.7	77.6	22.4

Sources: Same as Table 2.

propositions of that law might be properly summarized as follows :

(1) The lower total household expenditures are, the higher is the percentage of food expenses to total household expenditures. In this sense, a high percentage of food expenses means a low living.

(2) The lower total household expenditures are, the larger is the proportion occupied by secondary living expenses. In this sense, a high proportion of primary living expenses means a low living, whereas a high proportion of secondary living expenses means a high living.

(3) The larger total household expenditures are, the higher is the percentage occupied by subsidiary food in food expenses, while the lower is that occupied by staple food.

Applying these propositions, we now proceed to an analysis of our data in Table 10 while paying attention to the problem of how far these propositions or hypotheses are subject to limitations.

Our findings from Table 10 are as follows :

(1) In every period, total household expenditures of owner farmers were larger, and percentages (not the absolute value) of food as well as of primary living expenses were lower, while percentage of secondary living expenses was higher, than that of other types of farmers. For tenant farmers, total household expenditures were smaller, and percentages of food as well as of primary living expenses were higher, while the percentage of secondary living expenses was lower. For part-owner farmers, if any, total expenditures as well as percentages for those three categories of expenses ranked between owner and tenant farmers. If we consider the distinction of various types of farmers as that of class by size of income, these findings completely coincide with Engel's Law as summarized above.

(2) The average percentages of food expenses for all types of farmers were 50.77% in 1931, 51.44 in 1937, 49.73 in 1941, and 54.7 in 1950. The percentage of primary living expenses ranged from 66.49% in 1931, 67.69 in 1937, 69.24 in 1941 to 77.6 in 1950. As has been shown in Table 7, the average total household expenditures for all types of farmers were 805 yen in 1931, 935 yen in 1937, 911 yen in 1941, and 749 yen in 1950, the value for the last year being the smallest. From this we may conclude that the year 1950 ranked the lowest both in total household expenditures and for Engels' Coefficient (the percentage of primary living expenses as well as food being included.) However, comparison among the three periods before 1950 reveals that there did not exist any corresponding rank-relation between household expenditures and Engel's Coefficient, indicating that Engel's Law did not appear to be operating in those cases. The reason seems to be that there was no distinctive difference among the real values of household expenditures in those periods, while in the meantime there were remarkable changes in the price relations among food, primary and secondary living commodities.

(3) Comparisons by type and period make it clear that 1950 ranked lower than 1937 and 1941 in household expenditures and Engel's Coefficient for all types of farmers. However, for part-owner and tenant farmers, 1950 ranked

higher than 1931 in household expenditures, and lower in terms of Engel's Coefficient. (For example, the percentage of primary living expenses of tenant farmers was 69.13% in 1931 and 80.1% in 1950; and for part-owner farmers, 68.73 and 77.0 respectively.) These facts seem to suggest that changes in the price structure of food, and primary and secondary living commodities unfavorably affected living conditions in 1950 as compared to 1931, although the position of tenant and part-owner farmers in 1950 was slightly more advantageous than in 1931, as judged from real household expenditures measured by the general purchasing power index. In any event, a comparison of the Engel's Coefficient for each period makes it doubtful whether the living conditions of part-owner and tenant farmers were really better in 1950 than 1931, though they were the few instances in which household expenses in 1950 seemed to be larger than in the former period.

#### VI. ANNUAL FOOD EXPENDITURES AND PROPORTIONS OF STAPLE AND SUBSIDIARY FOOD EXPENDITURES

We have examined above the levels of living among farmers, by dividing their household expenditures into three major categories. Now we shall discuss in detail their living conditions by analyzing the major categories in terms of an itemized breakdown of expenses.

Statistics for principal items of food expenses are given in *NKC*, *BNSC 38* and *NCTP*. Table 11 shows the value of these items and percentages to total food expenditures of each period.

From Table 11 the following facts emerge for every period: (1) owner farmers exceeded part-owner farmers, while part-owner farmers exceeded tenant farmers in expenditures for rice, total staple foods, pork (in 1950 including fish and vegetables) and total subsidiary foods. (2) part-owner farmers' expenditures for sweet potatoes and miscellaneous foods are larger than both owner and tenant farmers'. This implies that (i) the excess expenditures for staple foods by owner farmers has usually been spent on rice rather than sweet potatoes or other miscellaneous foods. Further, there is a tendency to reduce spending on sweet potatoes and miscellaneous foods so as to spend more for rice. Contrary to this, the part-owner farmers' excess expenditures for staple foods over tenant farmers' has usually been used mostly for sweet potatoes and miscellaneous foods, and only a little for rice, simply to satisfy the desire for a larger quantity of food. (ii) Among the three types of farmers and for all periods, there is a rank-order correlation between quality and quantity of food and total amount of food expenditures. However, the total amount of food expenses varies with the size of total household expenditures and/or total income, though not at the same rate. Therefore, it might be said that quantity and quality of food rank differently according to relative size of income or household expenditures. This accords completely with the third proposition of Engel's Law summarized above.

Table 11 reveals one more thing, that is, that the staple foods rate (the

Table 11. Monetary Value and Percentages of Principal Items of Food Expenditure per Household

	Rice	Sweet Potatoes	Total of Staple Foods	Vegetables	Pork	Other	Total of Subsidiary Foods	Sum Total
<b>THE 1931 PERIOD</b>								
Owner Farmers (Old yen)	214.23	10.21	224.43	46.13	83.19	70.88	200.12	424.64
(%)	50.50	2.40	52.90	10.80	19.60	16.70	47.10	100.00
Part-Owner Farmers (Old yen)	173.68	17.64	191.32	31.60	28.14	63.97	122.71	315.03
(%)	55.10	5.60	60.70	10.10	8.90	20.30	39.30	100.00
Tenant Farmers (Old yen)	139.97	12.80	152.77	27.95	22.38	64.10	114.52	267.29
(%)	52.30	4.90	57.20	10.40	8.40	24.00	42.80	100.00
Average (Old yen)	175.19	13.62	188.81	35.10	43.80	66.26	145.01	333.88
(%)	52.40	4.00	56.40	10.50	13.30	19.90	34.70	100.00
<b>THE 1937 PERIOD</b>								
Owner Farmers (Old yen)	304.76	22.55	327.31	36.27	41.73	102.02	186.02	507.33
(%)	60.10	4.50	64.60	7.10	8.20	20.10	36.40	100.00
Tenant Farmers (Old yen)	267.22	27.83	295.15	38.05	33.03	85.94	157.02	452.17
(%)	59.10	6.10	65.20	8.40	7.30	19.10	34.80	100.00
Average (Old yen)	286.69	25.14	311.83	37.13	37.54	94.27	168.94	488.77
(%)	59.6	5.30	64.90	7.70	7.80	19.60	35.10	100.00
<b>THE 1950 PERIOD</b>								
Owner Farmers (New yen)	2,513.0	129.0	2,640.0	1,747.0	326.0	2,073.0	4,715.0	
(%)	53.3	2.7	56.0	37.1	6.9	44.0	100.0	
Part-Owner Farmers (New yen)	2,445.0	173.0	2,618.0	1,579.0	322.0	1,909.0	4,519.0	
(%)	54.1	3.8	57.9	35.0	7.1	42.1	100.0	
Tenant Farmers (New yen)	2,198.0	151.0	2,349.0	1,419.0	240.0	1,659.0	4,008.0	
(%)	54.8	3.8	58.6	35.4	6.0	41.4	100.0	
Average (New yen)	2,365.0	151.0	2,539.0	1,582.0	296.0	1,878.0	4,414.0	
(%)	54.1	3.4	57.5	35.8	6.7	42.5	100.0	

percentage of expenses for staple foods occupied in total food expenses) for owner farmers was lower than that for part-owner farmers, and that for part-owner farmers was less than for tenant farmers, with the exception of 1931. The situation is reversed, however, in regard to the percentage of subsidiary foods to total food expenditures. The case in 1931 period was unusual, since for part-owner farmers, as compared with tenant farmers, the staple food rate was larger, and the subsidiary food rate was smaller. This might be explained by the fact that the marginal portion of food expenses for part-owner farmers was spent not so much for subsidiary as for staple foods. Such an allocation of the additional part of food expenses is seen only when people are far from being content with the staple foods being consumed. This means that the quality of diet among part-owner farmers was low, though a little better than tenant farmers, in the period.

On the basis of the above findings we may propose the hypothesis that, except when the need for staple foods is not satisfied, the subsidiary food rate will become higher and higher with the increase of total food and total household expenses. Therefore, the subsidiary food rate may be used as an indicator for the level of living as well as of diet, if other conditions are equal.

In the above our analysis has been concentrated on the difference in food expenses by type of farmers in each period. Next, our analysis will be focused on the secular changes of food expenses, comparing the situation overall periods.

First, the subsidiary food rate in 1931 was higher than in 1950, while the latter was higher than in 1937. However, if we wish to evaluate the relative ranking among qualities of the diet and the levels of living over time, we should take into consideration whether or not other conditions are constant throughout the period. If any changes occurred, for instance, in the price relationship between staple and subsidiary foods, these would necessarily affect the subsidiary food rate, which latter would not merely reflect the quantitative difference among the volume of the staple and subsidiary foods over time. In this case, the subsidiary food rate would not be a reliable index of the relative quality of diet, as in the case where other conditions are properly assumed to be constant.

According to the retail price indices, the prices of staple foods declined much more than those of subsidiary foods in both 1931 and 1950, while the former increased much more than the latter in 1937.<sup>2</sup> Because the staple and subsidiary food rates are inevitably affected by such changes in prices, it would not be appropriate to judge the relative quality of diet by means of these rates for those periods.

<sup>2</sup> According to *TSKT* (No. 18) and *TWTY* (No. 99) the retail price index of the articles concerned is as follows:

	Polished Rice	Sweet Potatoes	Pork	Condiments
1931 (1929=100)	54.4	71.0	75.2	86.0
1937 (1929=100)	103.2	143.9	97.9	97.3
		Staple Foods		Other Foods
1950 (First Half of 1937=100)		784.99		885.42

However, there is another method of evaluating the quality of food, that is, by comparing the real value of food expenses. We have listed in Table 11 the amount spent on food per household in each period. The indices of purchasing power of the yen for retail commodities (with 1937=1) are as follows: 1.288 (102.43/79.53) in 1931, 0.639 (100/156.4) in 1941, and 0.11 (100/906.9) in 1950. In Table 12 are shown per capita annual real expenses for food, which have been calculated according to the formula:

$$[\text{nominal expenses for food per household}] \times [\text{index of purchasing power for retail commodities}] \div \text{average number of family members} = \text{per capita real expenses for food}$$

**Table 12.** Annual Real Value of Food Expenses per Household and per Capita (at the purchasing power on Taipei retail food market during the 1937 period)

	1931 <sup>1)</sup>		1937 <sup>1)</sup>		1941 <sup>2)</sup>		1950 <sup>3)</sup>	
	Per Household	Per Capita						
Owner Farmers (yen)	549.94	57.95	507.33	49.73	482.38	48.14	519	50.91
(%)		(116)		(100)		(97)		(102)
Part-Owner Farmers (yen)	395.76	40.55	—	—	—	—	497	48.48
(%)		(100)						(112)*
Tenant Farmers (yen)	344.27	39.53	452.17	49.47	444.22	47.02	441	48.25
(%)		(80)		(100)		(95)		(97)
Average (yen)	430.04	46.24	480.77	49.55	463.75	47.66	486	48.35
(%)		(93)		(100)		(96)		(98)

Note: \*1931=100.

Sources: 1) *TSKT* (No. 18) p. 159. 2) *TWTT*, p. 899. 3) *TWTY* No. 60 (p. 4) and No. 85 (p. 5).

According to the table, per capita annual real food expenses in 1931 were about 58 yen for owner farmers and about 40 yen for both part-owner and tenant farmers, while in each of the later periods they were about 49 yen for owner farmers and about 48 yen for the other types of farmers. A considerable difference was found among the three types of farmers in 1931, but scarcely any difference throughout the later periods. Major explanations for the 1931 situation seem to consist in the facts that (1) the area of land cultivated by owner farmers was extremely large (cf. Table 2) and (2) the conditions of tenancy had not been improved at all, while the rice price was still especially low as a result of the world agricultural depression of 1929 (see Table 8). During the period after 1931, there was neither any remarkable fluctuation over time, nor any noticeable difference among types of farmers, as far as real food expenses are concerned. This implies that the living of farmers in terms of food was stable throughout the period, maintaining a per capita annual level of 48-49 yen at Taipei retail food prices during the 1937 period.

## VII. CONSUMPTION OF RICE AND SWEET POTATOES

Any study of the living level should be made not only from the point of view of monetary value but also from the aspect of the physical quantity of consumer goods. It is also necessary to take into account nutrition.

Table 13 shows the volume of daily consumption of staple food per adult farmer (given in grams with the conversion rate of 1 Japanese *gō*=143 gr. and 1 Japanese *momme*=3.75 gr.) based on *Nōka shokuryō shōhī chōsa* (Survey of the Foodstuff Consumption of Farmhousehold in Taiwan) prepared by the Industrial Bureau, Taiwan Government-General, in 1922.

Table 13. Daily Consumption of Staple Foods per Adult Rice-Growing Farmer  
(in grams)

	Taipei District	Hsinchu District	Taichung District	Tainan District	Kaohsiung District	Average
(A) Rice	821	586	706	314	566	662
(B) Sweet Potatoes	147	820	1,150	1,089	1,011	864
Ratio (A): (B) (rice=1)	1: 0.17	1: 1.4	1: 1.6	1: 3.5	1: 1.8	1: 1.3

The figures clarify the fact that in districts where consumption of rice is high, consumption of sweet potatoes is low; while in districts where consumption of sweet potatoes is high, consumption of rice is low. (Taichung district is an exception where consumption of both rice and sweet potatoes is remarkably high.) Average rice consumption per day for five districts is 662 gr. and that of sweet potatoes is 864 gr. The unit consumption was defined in the report as follows: persons ten years and older were regarded as adult and assigned a value of 1.0; children between nine and six were assigned a value of 0.6; and children younger than five were 0.4. Therefore, the average of adults and children is equivalent to 0.666. In these terms, the average consumption per person amount to 443 gr. of rice and 578 gr. of sweet potatoes.

According to Mao-mao Yeh's "Taiwanjin shoku no ei-yōgaku-teki kōsatsu" (An Investigation of Taiwanese Meals, with special reference to Nutritional Value)<sup>3</sup> the results of a five to ten days survey carried out by him in 1937, sampling 44 tenant farmers and 35 owner farmers in the suburbs of Taipei City, per adult consumption per day was 881.2 gr. of rice and 157.5 gr. of sweet potatoes. The ratio of mixture of these two foods was 1:0.18. These are very near to both the absolute quantities and the mixture ratio for Taipei district given in Table 13.

I have estimated consumption of rice and sweet potatoes for each period on the basis of the following data: (1) the value of staple foods per household and number of family members given in *NKC*, *BNSC 38*, and *NCTP*; (2) prices of rice and sliced dry potatoes in *NCTP*, and *TWTY*; and (3) prices

<sup>3</sup> *Taiwan igaku zasshi* (Taiwan Medical Journal), IV-2 (1941).

of sweet potatoes in *TLTT*. The results of this estimation are shown in Table 14.

Table 14. Staple Food Consumption per Farmer Estimated

			Owner Farmers	Part-Owner Farmers	Tenant Farmers	Average
1931	Rice	Daily (gr.)	551	436	393	465
		Annual (kg.)	203	659	143	170
	Sweet Potatoes	Daily (gr.)	205	347	278	277
		Annual (kg.)	75	125	102	101
1937	Rice	Daily (gr.)	432	—	424	428
		Annual (kg.)	158	—	155	157
	Sweet Potatoes	Daily (gr.)	340	—	470	405
		Annual (kg.)	125	—	172	148
1950	Rice	Daily (gr.)	518	503	504	508
		Annual (kg.)	189	183	184	185
	Sweet Potatoes	Daily (gr.)	242	326	417	296
		Annual (kg.)	89	119	116	108
Arithmetical Average	Rice	Daily (gr.)	500	469	440	469
	Sweet Potatoes	Annual (kg.)	183	171	161	171
		Daily (gr.)	264	334	355	321
		Annual (kg.)	96	122	130	117

The table illustrates the following facts: (1) in 1931 the consumption of staple foods differed greatly between owner and other types of farmers, while in 1937 and 1950 there existed little difference among them, especially in rice consumption.

(2) In 1937 every type of farmer consumed a smaller amount of rice and a larger amount of sweet potatoes, compared with other period, while in 1950 the consumption of rice increased, and that of sweet potatoes decreased. This change corresponds to a change in the prices of rice and sweet potatoes. In 1937 the rise of the rice price was more rapid than that of sweet potatoes, and vice versa in 1950.<sup>4</sup> However, it is noteworthy that the annual consumption of rice changed little, shifting between about 160 and 200 kg. for owner farmers; 160 and 180 kg. for part-owner farmers; and 140 and 180 kg. for tenant farmers.

(3) Average annual consumption of rice in these three periods amounted to about 180 kg. for owner farmers, 170 kg. for part-owner farmers, and 160 kg. for tenant farmers; and that of sweet potatoes amounted to 100 kg., 120 kg., and 130 kg. respectively.

If we ignore the difference among types of farmers, annual consumption of staple food per capita amounted to 170 kg. of rice and 120 kg. of sweet potatoes. These figures are similar to the results of the survey by the Taiwan Government-General in 1922.

	1931	1937	1950
<sup>4</sup> Rice (10 kg., yen)	1.108	1.905	13.036
Sliced Dry Sweet Potatoes (100 kg., yen)	4.13	5.07	38.33

One of the interesting facts related to consumption of staple food, especially of rice, is that in spite of the small variations among different types of farmers and over different periods, there exists considerable inequality among districts. Table 15 gives concrete evidence of this, on the basis of the same data used in Table 14.

**Table 15.** Staple Food Consumption by Farmers in Each District in 1937 and 1950 Estimated

	Taipei District	Hsinchu District	Taichung District	Tainan District	Kaoshiung District	Average
<b>THE 1937 PERIOD</b>						
(A) Rice per day (gr.)	467	461	452	336	398	427
per annum (kg.)	170.5	151.8	164.9	122.7	145.4	156
(B) Sweet per day (gr.)	52	471	377	872	321	413
Potatoes per annum (kg.)	19.0	172.0	137.5	318.5	117.0	151
Ratio (A): (B) (rice=1)	1: 0.1	1: 1.1	1: 0.8	1: 2.6	1: 0.8	1: 0.97
	Northern Districts	Central Districts	Southern Districts	Average		
<b>THE 1950 PERIOD</b>						
(A) Rice per day (gr.)		569	529	321		518
per annum (kg.)		207	193	117		189
(B) Sweet per day (gr.)		178	290	430		250
Potatoes per annum (kg.)		65	106	157		91
Ratio (A): (B) (rice=1)		1: 0.31	1: 0.55	1: 1.33		1: 0.48

As is clear from the table, farmers in all districts and all times have adjusted their consumption of staple foods to changes in the price relation between rice and sweet potatoes. However, throughout the period under study, Taipei (Northern) district consistently had the lowest mixture ratio of rice and sweet potatoes, 1: 0.1-0.3. The district with the highest ratio was Tainan (Southern) maintaining a 1: 1.26-1.33 level, while on the intermediate level were the districts of Taichung (Central) 1: 0.5-0.8, Kaoshiung 1: 0.80 and Hsinchu 1: 1.1. The reasons why Tainan district maintained the highest rate of sweet potato consumption seem to be that, the variety of crops and per acre yield is limited due to poor water supply. Consequently, the range of choice of foods is extremely limited for farmers in the southern districts. In sum, farmers who enjoy the best quality foods are those in Taipei district, their annual average of food consumption per capita amounting to 170-200 kg. for rice and 20-60 kg. for sweet potatoes. The poorest are those in the southern districts who consumed 110-120 kg. of rice and 160-300 kg. of sweet potatoes; and in the middle are those in other districts consuming 160-190 kg. of rice and 110-170 kg. of sweet potatoes. Generally speaking, it would seem appropriate to estimate that one person consumed annually 170 kg. of rice and 140 kg. of sweet potatoes.

VIII. QUANTITY AND VARIETIES OF SUBSIDIARY FOODS

Subsidiary foods are usually divided into two categories: vegetable and animal. The quantities of consumption of these foods were listed in the report of surveys by Mao-mao Yeh and the Government-General. In the latter report the estimate of consumption of these foods for one year previous to the survey was appended. An examination of the figures regarding certain principal items has convinced me that the results obtained by the latter report are also applicable to later years, for example, to 1931 and 1937. Therefore, I shall reproduce in Table 16 the data from the above two report with some necessary adjustments.

Table 16. Consumption of Subsidiary Food per Adult Farmer

		Government-General		Mao-mao Yeh's
		Surveyed Figures	Estimated Figures	Survey Figures
<b>ANIMAL</b>				
Marine Products	per day (gr.)	61.26	26.40	33.20
	per annum (kg.)	22.36	9.63	12.12
Pork	per day (gr.) <sup>1)</sup>	29.35	21.50	21.80
	per annum (kg.)	10.54	7.95	7.96
Poultry	per day (gr.)	7.89	4.50	— <sup>3)</sup>
	per annum (kg.)	2.88	1.66	— <sup>3)</sup>
Eggs	per day (gr.)	4.40	2.00	—
	per annum (no.) <sup>2)</sup>	30.66	15.03	—
Fat	per day (gr.)	9.61	5.40	6.00
	per annum (kg.)	3.50	1.98	—
Total	per day (gr.)	112.51	59.80	61.00
	per annum (kg.)	41.07	21.83	22.27
<b>VEGETABLE</b>				
Bean Oil	per day (gr.)	5.830	2.300	3.000
	per annum (kg.)	2.128	0.846	—
Bean-curd	per day (gr.)	16.91	3.760	60.190
	per annum (kg.)	6.269	1.373	—
Beans	per day (gr.)	13.990	37.800	48.350
	per annum (kg.)	5.180	13.800	—
Noodles	per day (gr.)	23.170	13.070	3.600
	per annum (kg.)	8.456	4.747	—
Vegetables	per day (gr.)	359.640	309.310	—
	per annum (kg.)	120.000	113.000	—
Pickles	per day (gr.)	36.200	10.700	52.370
	per annum (kg.)	13.220	3.923	—
Fruit	per day (gr.)	0.350	7.350	—
	per annum (kg.)	0.354	2.685	—
Sugar-cane	per day (gr.)	21.200	28.420	—
	per annum (kg.)	7.738	4.687	—
Total	per day (gr.)	477.290	412.750	511.040
	per annum (kg.)	174.211	150.654	—

CODIMENTS				
Soy-sauce	per day (gr.)	12.510	18.900	21.000
	per annum (kg.)	4.566	6.900	—
Sugar	per day (gr.)	5.510	6.250	—
	per annum (kg.)	2.010	2.280	—
Salt	per day (gr.)	10.930	34.070	—
	per annum (kg.)	3.990	12.410	—
Bean Paste	per day (gr.)	1.280	3.810	—
	per annum (kg.)	0.469	1.403	—
Total	per day (gr.)	30.230	63.03	21.000
	per annum (kg.)	10.034	23.006	—

Note: On the basis of the data of expenses for pork in *NKC* and *BNSC 38* (see Table 11) and the data of Taipei retail price of pork given in *RTPP* (0.753 yen per 1 kg. in 1931 and 0.943 yen per 1 kg. in 1937) annual per household and daily per capita consumption of pork are estimated as follows:

	1931	1937
Owner Farmers (annual, per household ; kg.)	110.48	411.25
(daily, per capita ; gr.)	32.00	11.80
Part-Owner Farmers (annual, per household ; kg.)	37.42	—
(daily, per capita ; gr.)	10.50	—
Tenant Farmers (annual, per household ; kg.)	29.59	35.03
(daily, per capita ; gr.)	9.30	10.50

According to this estimate, the daily per capita consumption is about 10 gr. However, since these figures are calculated on the basis of the Taipei retail price, we attempted to obtain figures which would reflect more precisely the reality of farmhousehold economic conditions by assuming that rural retail prices were about two-thirds of those in Taipei. Thus we arrived at the figure of about 15 gr. Next, we adjusted this figure using the conversion rate 0.67 to obtain daily per adult consumption, arriving at the figure of 22 gr. which nearly equals the estimate of the Government-General and survey figures of Yeh.

2) Calculated assuming that one egg weighs 52.5 gr.

3) — indicates that no figures are available.

According to Table 16 the daily consumption of subsidiary food per adult person totalled 490–620 gr., consisting of 410–510 gr. of vegetable products, 60–110 gr. of animal products, and 20–60 gr. of condiments. In short, vegetable products accounted for almost 80–90%, the remaining part (10–20%) being occupied by animal products. Of the vegetable products about 80% was comprised of greens and pickles, while beans accounted for less than 10%. Staple foods are excluded from this account. These facts together suggest that the Taiwanese diet is predominantly dependent on vegetables.

## IX. CALORIC AND NUTRITIVE VALUE

As observed above, the mean annual consumption of staple foods per capita farmer is 170 kg. of rice and 140 kg. of sweet potatoes. If converted according to the ratio of 1 to 0.67, the annual consumption of staple foods per adult comes to 253 kg. of rice and 210 kg. of sweet potatoes. How much

Table 17. Nutritional Value of the Daily Diet per Adult Farmers

	Total Intake (gr.)	Calory (cal.)	Carbo-hydrates (gr.)	Fat (gr.)	Protein (gr.)	Calcium (gr.)	Phosphorus (gr.)	Iron (gr.)
<b>STAPLE FOODS</b>								
Rice (a)	694.00	2,436.00	534.38	416.00	50.66	—	—	—
(b)								
Sweet Potatoes (a)	575.00	690.00	159.00	115.00	6.33	—	—	—
(b)								
Total (a)	1,269.00	3,126.00	693.38	531.00	56.99	—	—	—
(b)								
<b>ANIMAL SUBSIDIARY FOODS</b>								
Marine Products (a)	61.26	72.29	11.09	2.88	11.09	0.123	0.428	—
(b)	24.40	31.16	4.78	1.24	4.78	0.053	0.185	—
Pork (a)	29.35	41.97	6.22	1.76	6.22	—	0.117	—
(b)	21.50	30.75	4.66	1.29	4.56	—	0.086	—
Poultry (a)	7.89	11.52	1.41	0.62	1.41	—	0.033	—
(b)	4.50	6.59	0.81	0.35	0.81	—	0.018	—
Eggs (a)	4.40 <sup>1)</sup>	7.48	0.56	0.55	0.56	0.022	0.004	0.022
(b)	2.00 <sup>2)</sup>	3.40	0.25	0.25	0.25	0.010	0.002	0.010
Fat (a)	9.60	91.28	0.02	9.59	0.02	—	—	—
(b)	5.40	51.17	0.01	5.39	0.01	—	—	—
Total (a)	112.50	224.54	19.31	15.40	19.30	—	—	—
(b)	59.80	122.07	10.51	8.52	10.41	—	—	—
<b>VEGETABLE SUBSIDIARY FOODS</b>								
Bean-curd (a)	16.91	9.97	0.19	0.05	1.12	0.017	0.034	—
(b)	3.76	2.22	0.40	0.01	0.25	0.004	0.008	—
Bean Oil (a)	5.83	54.23	—	5.82	—	—	—	—
(b)	2.30	21.39	—	2.30	—	—	—	—
Beans (a)	13.99	43.30	5.18	1.04	3.04	0.028	0.140	—
(b)	37.80	116.80	13.99	2.79	8.20	0.076	0.378	—
Noodles (a)	23.17	85.72	17.58	0.25	2.75	0.023	0.171	—
(b)	13.07	48.36	9.92	0.14	1.55	0.013	0.097	—
Vegetables (a)	159.64	80.20	12.59	0.72	5.33	0.090	0.270	—
(b)	309.31	68.98	10.82	0.62	4.58	0.077	0.232	—
Pickles (a)	36.20	21.36	3.78	0.11	1.19	—	0.108	—
(b)	10.74	6.32	1.13	0.01	0.35	—	0.032	—
Fruit (a)	0.35	0.41	0.08	0.01	0.01	—	0.001	—
(b)	7.35	8.67	1.71	0.10	0.18	0.026	0.052	—
Sugar-cane (a)	21.20	—	—	—	—	—	—	—
(b)	28.42	—	—	—	—	—	—	—
Total (a)	477.24	295.18	39.40	8.00	13.44	0.158	—	—
(b)	412.05	272.74	37.61	5.97	15.11	0.196	—	—
<b>CONDIMENTS</b>								
Soy-sauce (a)	12.51	3.38	0.50	—	0.26	—	—	—
(b)	18.90	5.10	0.76	—	0.40	—	—	—
Sugar (a)	5.51	20.88	5.13	—	0.07	—	—	—
(b)	6.25	23.69	5.70	—	0.09	—	—	—
Salt (a)	10.93	—	—	—	—	—	—	—
(b)	34.07	—	—	—	—	—	—	—
Bean Paste (a)	1.28	2.15	0.29	0.12	0.15	0.001	0.006	—
(b)	3.81	6.40	0.86	0.04	0.43	0.004	0.019	—
Total (a)	30.23	26.41	5.92	0.12	0.48	0.146	—	—
(b)	60.03	35.19	7.32	0.04	0.92	0.667	—	—
Grand Total (a)	1,889.02	3,672.07	758.00	28.83	80.21	0.304	1.311	0.022
(b)	1,804.58	3,555.94	748.82	19.84	83.43	0.263	1.109	0.010

Notes: (a) Survey figures. (b) Calculated from the estimates for the year previous to the survey. 1) 30.66 eggs per year. 2) 15.03 eggs per year. Calculated at 52.5 gr. per egg.

caloric and nutritive value is contained in the above staple and subsidiary foods together? The results, estimated on the basis of "Nutritional Values Chart of Common Foods" are given in Table 17.

For the purpose of evaluating the intake of adult Taiwanese farmers, I would like to compare in Table 18 the above results with the recommended daily dietary allowances for manual laborers presented in *Inyanshueh Chiyau* (Outline of Nutriology), translated and edited by the Association of the American Medical Aid for Taiwan (Taipei, 1953).

**Table 18.** Evaluation of the Daily Diet of Taiwanese Farmers

Quantity of Food (gr.)	Calory (cal.)	Carbo- hydrates (gr.)	Fat (gr.)	Total	Protein (gr.)		Calcium (gr.)	Phos- phorus (gr.)	Iron (milligr.)
					Veget- able	Animal			
Intake for Taiwanese Adult Farmers									
1,800-1,900	about 3,600	750-760	20-30	80-83	(80%)	(20%)	0.25-0.3	1.1-1.3	10-22
Recommended Allowance for Manual Laborers									
	3,000		65-80	70-80	(66.7%)	(33.3%)	1	1.2-1.5	12

Generally, it may be said that Taiwanese farmers derived sufficient amount of carbohydrates, vegetable protein, iron, and phosphorus from their diet, but an insufficient amount of fat, animal protein, and calcium. Moreover, since rice and sweet potatoes constitute the staple foods, it is generally recognized that farmers always suffer from a shortage of Vitamin B<sub>1</sub>. However, as we have seen above, the Taiwanese farmhousehold generally has the economic ability to solve this kind of dietary problem. In this sense, the partial nutritional deficiency originates in poor dietary habits and improper allocation of economic resources among foods, rather than in lack of economic capacity. Consequently, in order to improve Taiwanese farmers' diet it is essential to see that they so manage their farming as to produce more animal products and albuminous such as beans, as well as to learn more about proper nutrition.

## X. EXPENDITURES FOR FUEL & LIGHTING, CLOTHING, HOUSING, AND FURNITURE

Among the primary living expenditures the second largest items are fuel & lighting and clothing. The sources listed above reveal that expenditures for fuel & lighting were larger than those for clothing in 1931 and 1950, but in 1941 the latter exceeded the former and in 1937 they were almost the same.

The largest part of fuel & lighting expenditures were spent on wood<sup>5</sup>

<sup>5</sup> As a results of recent developments in power plant construction, electrification of farm households has been remarkable, but it was achieved mostly in the period succeeding that under study.

and the bulk of wood fuel was used for cooking. In this sense fuel expenses can be regarded as supplementary to food expenses, and just like food, must be supplied every day. The sources pointed out that farmers relied on their own wood to supply 50-70% of their fuel requirements, the rate of self-sufficiency being next only to that of staple foods. Therefore, forest land is as important as farmland for large farm families.

Expenses for clothing and their percentage to total household expenditures in each period are shown in Table 19.

**Table 19.** Expenses for Clothing and Percentage in Household Expenditures

	1931		1937		1941		1950	
	yen	%	yen	%	yen	%	yen	%
Owner Farmers	35.24	3.88	61.23	6.03	173.58	10.83	515	5.8
Part-Owner Farmers	30.85	5.20	—	—	—	—	464	5.6
Tenant Farmers	20.39	4.18	52.22	6.16	149.35	11.36	347	5.3
Average	28.70	4.36	56.89	6.09	161.34	11.08	451	5.6

Sources: Same as Table 2. Percentages have been calculated by the author.

The retail price indices for clothing at Taipei market prices, taking 1937 as the base year are as follows: 75.1 in 1931, 100.0 in 1937, 246.2 in 1941, and 1,674.6 in 1950.<sup>6</sup> Calculated from the expenses listed in Table 19 and the above indices, the real value of clothing expenses at the constant price of 1937 are as given in Table 20.

**Table 20.** Real Expenses for Clothing among Farmhouseholds

(at the constant value of 1937 yen)

	1931	1937	1941	1950
Owner Farmers	46.92	61.23	70.50	30.75
Part-Owner Farmers	41.08	—	—	27.71
Tenant Farmers	27.15	52.22	60.66	22.34
Average	38.21	56.89	65.49	26.94
Index	67.10	100.00	115.10	47.10

As is clear from the table, real expenses for clothing, unlike food expenses, fluctuate greatly according to period. It is especially worthy of attention that the real expenses for clothing in 1951 fell to less than half of 1937. The major reasons for this are first, the reduction of real farmhousehold expenditures and second, the rapid rise of clothing prices as well as relatively high elasticity of demand for clothing among farmers. Besides, the extremely large amount of clothing expenses in 1941 seems to have been brought about partly by the practice of hoarding during the early period of the war economy.

The proportion of housing expenses was very low, as compared to other items in the primary living expenditures, ranking immediately above furniture,

<sup>6</sup> The data came from *NCTP* (No. 18, 1938), *TSGT* (No. 22, 1944) and *TWTY* (No. 60, 1950 and No. 85, 1953).

which was the lowest. Table 21 shows housing expenses and the percentages in total household expenditures.

**Table 21.** Expenses for Housing and Percentages in Household Expenditures  
(at the current yen for each period)

	1931		1937		1941		1950	
	yen	%	yen	%	yen	%	yen	%
Owner Farmers	34.10	3.96	29.33	2.82	46.42	2.50	461	5.2
Part-Owner Farmers	13.75	2.15	—	—	—	—	367	4.4
Tenant Farmers	12.66	2.35	25.32	4.90	36.35	2.77	294	4.2
Average	19.89	2.99	27.40	2.89	40.95	2.81	374	4.5

Sources: Same as Table 2. Percentages have been calculated by the author.

Farmers whose household expenditures are larger, spend a larger much money for housing, while those whose household expenditures are smaller, spend a smaller amount for this purpose. A similar relationship exists also in the case of food, fuel & lighting and clothing. However, unlike the case for food rate, there is no rank correlation to be found between the percentages (not the actual amounts) of housing expenditures and the relative size of total household expenditures or income. The same is true of the expense percentages for clothing and fuel & lighting.

According to *RTPP* the number of rooms per farmhouse was as follows.

**Table 22.** Rooms per Household by Percentage of Type of Farmers

	1-2 Rooms	3-4 Rooms	5-6 Rooms	More than 7 Rooms
Owner Farmers	29	39	20	12
Tenant Farmers	38	46	11	5
Average	32.4	41.5	16.6	8.2

Source: *RTPP*. Because the total percentage shown in this source was less than 90%, suggesting that the figures were mis-calculated, I have corrected them on the basis of "Tabular Materials Compiled from 1776 Detailed Household Schedules" by JCRR (1953), which was one of the original data for *RTPP*.

Average number of family members of farm families surveyed was 6.9 persons in the case of owner farmers and 6.0 persons in the case of tenant farmers. For a family with 6-7 members a house which consists of less than 5-6 rooms can hardly be considered sufficient. If the house has 3-4 rooms it must be fairly small for 6 or more family members, and if the house has only 1 or 2 rooms it must be too small. According to these standards, more than 30% of the households surveyed were intolerably small, 40% were bearable, and only 25% or less enjoyed sufficient space.

*RTPP* stated that the bulk of the farmhouses were constructed of poor materials. For example, the walls of 40% were either wholly or partially of bamboo, 30% were roofed with tiles, and 40% had thatched roofs. These houses are therefore not very durable, more than half of them lasting only

25 years or so and often requiring reconstruction and/or re-roofing.

Expenditure for furniture is the smallest item among the primary living expenses. *RTPP* states that the number of houses equipped with such electric appliances as irons, record players and radios is extremely small. Only one-eighth of the households surveyed owned sewing machines, which used to be regarded as one of the important articles for newly-weds.

XI. EXPENSES FOR CEREMONIES AND MEDICAL CARE

According to *NKC*, *BNSC 38*, *BNSC 48*, and *NCTP*, the items of secondary living expenditures and their percentages to total current household expenditures are as follows: ceremonies, 5.95%; medical & personal care, 5.43; social expenses, 4.78; incidental expenses, 4.67; taxes, 3.24; education, 1.89; recreation, 0.46; culture, 0.31; and others. The amounts and percentages only include ordinary expenditures, leaving aside extraordinary expenditures. However, the greater part of the expenses for ceremonies and medical care are of an extraordinary nature. Therefore, if we ignore this part, we will neither be able to grasp the reality of these particular items of household expense nor the general conditions of Taiwanese farmers' living.

Extraordinary expenses for ceremonial occasions per household ranged widely from about ten to more than one thousand yen. Expenses of about ten yen probably were spent for occasional birthday celebrations or small offerings for Buddhist ceremonies. Small expenses of this kind should be treated separately from large expenses such as for a wedding or funeral. If we divide extraordinary expenses into two groups, small and large scale, with 100 and

Table 23. Number of Household with Extraordinary Ceremonial Expenses and the Actual Amount Thereof

	Total Number of Households Surveyed	(at current yen)			
		Small Scale		Large Scale	
		Number of Households (with expenses)	Actual Expenses	Number of Households (with expenses)	Actual Expenses
<b>THE 1937 PERIOD</b>					
Owner Farmers	98	12	53.89	19	580
Tenant Farmers	91	10	43.35	12	558
Total Households or Average Expense	189	22	48.62	31	569
<b>THE 1941 PERIOD</b>					
Owner Farmers	100	5	69.41	14	729
Tenant Farmers	102	6	54.68	6	886
Total Households or Average Expense	202	11	62.20	20	556

Sources: Calculated from the data for per household living expenditures given in *BNSC 38* and *BNSC 48*.

150 yen as the dividing line for 1931 and 1941 respectively, the number of households which actually spent money for these purposes and the amounts are as presented in Table 23.

The number of households with extraordinary ceremonial expenditures in 1937 numbered 53 in all, occupying 28% of the total households surveyed. The large-scale extraordinary expenses averaged about 570 yen, and amounted to 630 yen when ordinary expenses were added. Total ceremonial expenses in 1937 occupied about 56% of total household expenditures of 1,122 yen, including other extraordinary expenditures. This exceeded total expenditures for food.

For the year 1941, 32 households or 15% of those surveyed made extraordinary expenses for this purpose. The large-scale expenses averaged about 775 yen, and amounted to 826 yen, when ordinary expenditures of the same item were added. The latter sum accounted for 51% of total household expenditures which were 1,618 yen.

Total ceremonial expenditures for those households actually having such expenses amounted to almost half of total household expenditures. If the amount and percentage of each expense indicate the intensity of demand, it can be assumed that ceremonial expense is the most essential demand for farmers. However, the fact that this expense has a high elasticity is worthy of attention. For example, the ratio of households who spent on this item declined remarkably from 28% to 15% during the period from 1937 to 1941, and further, the amount of real expenses also dropped from 570 yen to 485 yen ( $=775 \div 159.9/100$ ), i. e., to about 85% of the former period.

For these reasons, it seems to be both necessary and feasible for us to change the ideas and customs related to life in rural communities in Taiwan, for example, by simplifying marriage and funeral ceremonies, and using the money thus saved for the improvement of diet and household finances. Ex-

**Table 24.** Number of Households with Extraordinary Medical Expenses and the Actual Amount Thereof

	Total Number of Households Surveyed	Number of Households (with expense)	Actual Expenses (in current yen)
<b>THE 1937 PERIOD</b>			
Owner Farmers	98	18	137.80
Tenant Farmers	91	11	106.97
Total Households or Average Expense	189	29	122.39
<b>THE 1941 PERIOD</b>			
Owner Farmers	100	36	138.45
Tenant Farmers	102	17*	134.86
Total Households or Average Expense	202	53	136.66

Note: \*Out of 18 households, one which spent an exceptionally large sum, 1,160, has been excluded.

Sources: Same as Table 23.

traordinary medical expenditures, which constituted the bulk of the expenses for personal and medical care, were as shown in Table 24.

According to the table, the number of households with extraordinary expenses for personal and medical care occupied 15% out of 189 households surveyed in 1937, and the expenses amounted to 122 yen. When ordinary expenses were added, the expenses for these purposes reached 188 yen in all, being 18% of total household expenditures including extraordinary expenses. In 1941, the number of the comparable households accounted for 27% out of 202 households surveyed, and comparable expenses amounted to 137 yen. Together with ordinary expenses the item amounted to 215 yen (this is the equivalent of 134 yen at 1937 value), being 13% of total household expenditures.

The comparison between those two periods makes clear it that both the number of households having this item of expense and the percentage increased for 1941, but on the other hand the real value of the expense decreased by 30%. This implies that the medical and hygienic conditions of Taiwanese farmers worsened in wartime (1941). Again, in all periods, expenses for this purpose occupied no less than 15% of total household expenditures, meaning that it was a heavy burden to farmhousehold.

The medical and hygienic conditions in rural districts after 1949, when the Joint Committee for Rural Reconstruction started its activities, are reported in *RTPP* as follows: (1) According to reports made by the leaders of towns and villages there were some changes in rural communities such as i) increase in number of physicians, ii) plentiful supply of medicines, and iii) decline of the death rate of the rural population, particularly by infectious diseases. However there are some physicians who have not been well trained in modern medical techniques. (2) Most women in rural areas usually give birth with the help of midwives or relatives. During the two years preceeding 1949, out of 751 cases 34% were helped by relatives, 33% by midwives, 18% by assistants at maternity houses, 3% by physicians, 5% by neighborers, and 3% without assistance, the remaining 4% being not reported.

## XII. CHANGES IN SECONDARY LIVING EXPENSES

Table 25 shows the percentages and changes over time for each item of secondary living expenses to total household expenditures.

If we include expenses for ceremonies and personal & medical care in the category of secondary living expenses, the latter accounted for about a third of total household expenditures in the periods before the end of the war, dropping to 21% after the war. When these expenses are excluded, the proportions amounted to 20% for the three periods before the war, and to 10% for 1950. As will be shown in Table 26, the average of real secondary living expenses reached about 280 yen for the periods before the end of the War, and less than 190 yen for 1950 (at 1937 constant value). However, if those items are excluded, average expenses amounted to 180 odd yen for the

**Table 25.** Percentage Occupied by the Items of Secondary Living Expenditures in Farmhousehold Expenditures Overall Periods

	1931	1937	1941	Average of Three Periods	1950
Ceremonial	7.60	6.41	3.49	5.83	6.3
Medical and Personal Care	5.52	7.00	5.41	5.84	3.8
Social	6.17	5.26	4.69	5.37	3.0
Incidentals	5.21	4.97	5.31	5.16	3.2
Taxes	2.74	3.33	5.40	3.82	1.5
Education	1.06	1.97	3.05	2.04	1.5
Recreation	0.27	0.76	0.70	0.58	0.1
Cultural	0.37	0.32	0.43	0.37	0.1
Others	4.57	2.29	2.28	3.05	1.8
Total (A)	33.51	32.31	30.76	32.06	21.3
Total (B)	20.41	18.93	21.86	20.40	11.2

Notes: (A) Inclusive of expenses for the above first two items.

(B) Exclusive of expenses for the above first two items.

**Table 26.** Real Value of the Secondary Living Expenditures in each Period (at the constant value of 1937)

	1931	1937	1941	Average of Three Periods	1950
Total (A)	270	320	280	284 (100)	189 (100)
Total (B)	164	178	199	181 (100)	84 ( 46)
Household Expenditures	805	935	911	887 (100)	749 ( 84)

Notes: (A) Inclusive of expenses for ceremonies and for medical and personal care.

(B) Exclusive of expenses for ceremonies and for medical and personal care.

former period, 80 odd yen for the latter, being 46% of the former.

According to conversations between survey members of the JCRR and villagers, reported in "Tabular Materials" (see Table 22, Source), the number of radios in rural villages at the end of 1952 was smaller than in 1937. Households planning to buy a radio accounted for 10% of total households surveyed. Reasons for this low percentage were that repair facilities were not available in rural areas and second, lack of purchasing power on the part of farmers. Only 10% of the families surveyed had books, magazines, and/or newspapers and of these people those who subscribed to newspapers accounted for 90%.