

# Behavior of Household Rice Consumption in Different Income Level

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**Abstract**— This research aims to determine the behavior of household rice consumption in rural and urban areas, in terms of number, how to get rice, rice quality, and size of household spending on consumption at different income levels. The study design was a combination of explanatory research with descriptive research. The choice of location is done by multistage sampling method. Sampling of 180 respondents was conducted using simple random sampling. The results showed that the average household consumption of rice is higher in rural areas than urban. Most of the rural households get rice from own production, while urban households get rice from buying. There is a tendency the better is the household income in rural and urban areas, the quality of rice consumed is getting better. For rural households, there is a tendency with higher incomes, expenditures for the greater consumption of rice. The opposite occurs in urban households.

**Keywords**— behavior, different income levels, household rice consumption, rural and urban areas

## I. INTRODUCTION

FOOD is one of the primary needs of human beings. Food is a commodity that is ranked first in the order of community needs, spend an average of 60% revenue share of the Indonesian population. Downstream of the attraction is the food agribusiness aspects of consumption (demand side). Current food consumption patterns of the population of Indonesia is still far from the recommended requirements. If viewed from the consumption of food in addition to staple foods, fruits consumed ranks highest, followed by vegetables, meat, milk, and eggs. However, fruit and vegetable consumption per capita is still less than the recommended. For Indonesia, rice plays an important role both in terms of production and consumption side. This is due as an agricultural country, most of the population depends on agriculture, especially rice production activities. If viewed from the side of consumption, rice is the staple food items that dominate the diet of people in Indonesia. Based on per capita consumption data, dependence on rice Indonesian population in 2007 is still very high, which is 125.3 kg / capita / year as in

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[3].. Food Balance until 2000 to 2007 showed this number higher than Malaysia (76.5 kg / capita), India (70.9 kg / capita), and China 76, 8 kg / capita South Sumatra province is a center of rice production in Indonesia or fifth second for Java after South Sulawesi province. Potential for wetland species quite varied paddy fields are irrigated, rainfed, lowland rice fields, tidal rice fields, and the dry land. Statistically, the number of rice production of the province meet its consumption needs even likely to occur surplus.

Rice consumed by household in both producer and consumer areas, in rural and urban areas can be different in quality as revealed by [17] and [9]. The conclusion is such the quality of rice is only associated with the level of household income, but do not affect the amount consumed. Reference [11] showed that the increase in household income will increase the demand for food, so there was a trend toward reduction in demand for rice. This research aims to determine the behavior of household rice consumption in urban and rural areas in terms of number, how to get rice, rice quality, and size of household spending on consumption at different income groups in South Sumatra province.

## II. LITERATURE REVIEW

Food consumption is the amount of food, singly or diversification, which is consumed by a person or group of people who aim to meet the needs of physiological, psychological and sociological. The purpose physiological is an effort to fulfill the desire eat (flavor hungry) or for obtain substances-substances the necessary nutrients of the body. Psychological goals is to meet the emotional satisfaction or taste, while the objective sociological is to nurture human relationships within families and communities. Food consumption is a major factor to meet the nutritional needs and provide energy for the body, metabolism, repair body tissue, and for growth.

Consumption, the amount and type of food is influenced by these factors: the type of food, amount / food production and food availability. Consumption level is determined more by the quality and quantity of food. Food quality reflects the essential nutrients contained in the food, while the quantity of food reflects the amount of each nutrient in a food. To achieve a state of good nutrition, the quality and quantity of elements must be met.

Reference [16] showed that the number of people and the income of the has a positive effect on rice consumption. Earned income elasticity of 0.22 is relatively small. This is

consistent with the nature of the income elasticity of demand for agricultural products is generally low, whereas on the other hand increase in income causes only a small increase in the demand. According to the research [7] that the factors that significantly affect the level of rice consumption is the income of the population and the number of family members. Increase the level of rice consumption can be caused by increasing population income level.

Income is a factor that highly affects the household expenditure for household needs. In rice consumption, income is one of the determining factors. According to Engel as in [6] that the purchase of the basic commodities or primary will decrease with rising incomes, rice is a staple the proportion household income spent on buying rice will decrease.

Microeconomic theory expressed that one of the determinants of demand for an item to be influenced by the level of prices of goods and the prices of other goods. The price of rice and food prices affect the level of consumption substitute of rice because it deals with the purchasing power of consumers. If the prices of goods rise, consumers will tend to reduce consumption as a result of the reduced purchasing power. Reference [9] showed that the effect of rice prices on household consumption of rice is identical with their respective areas, to urban areas where the average household income is high enough, the consumption of rice at high prices no significant effect even likely level of consumption will increased. In contrast to the rural areas where rice prices rise, the amount of rice consumed will decline and be replaced by food substitutes like sweet potatoes.

In addition, based on the location, there are differences in consumption of rice, which is the location where the people who lived close to the city center tends to decrease. In contrast, in areas away from the city center of rice consumption tends to increase as in [8], it is an indication of the influence of the change in tastes and incomes. Therefore, increase the proportion of people in urban areas, rural areas, and areas that are not traditional consumers of rice demand will determine the development of rice consumption in the future.

### III. RESEARCH METHOD

This study was designed with a combination of research methods to explain (explanatory research) with methods of descriptive research (descriptive research). The data collected in the form of primary data and secondary data related, then analyzed with a systemic approach, defines a data type of interview, observation, documentation and literature search results were analyzed in a systematic sample as needed. The process of data analysis is not lost since the beginning of the research process of data reduction to start concluding.

The choice of location is done by using multistage sampling method to get the regional representation major consumers of rice in South Sumatra Province, the City of Prabumulih, Lubuk Linggau and Palembang and the main rice-producing areas Ogan Komering Ilir, Banyuasin and Musi Rawas. such sampling variability of data compiled by the province of South Sumatra and classified on the basis of urban and rural areas.

Sampling method is done by using simple random sampling, a number of 180 samples. Tabulation of data analysis performed, followed by mathematical calculations. such data have been processed further interpreted and described systematically to answer the research objectives.

## IV. RESULT AND DISCUSSION

### A. Household Rice Consumption

The results showed that the average household consumption of rice is equal to 99.9 kilograms per capita per year. This amount of rice consumption has decreased when compared to the average consumption of rice in 2005, amounting to 124 kilograms per capita per year as in [10] and in 2008 was 107.48 per capita per year [11]. However, rice consumption in South Sumatra has decreased, the value is still above the target of rice consumption projections Susenas South Sumatra in 2011, amounting to 96.6 kilograms per capita per year.

Table I shows that rice consumption average rural households is equal to 26.50 kilograms per household per month or equivalent to 9.24 kilograms per person per month. Most households (51.1%) consume rice ranged from 25 kilograms to 42 kilograms per month. If viewed from the side of household income, the majority of low-income households (56.7%) consume rice ranged from 7 pounds to 24 pounds per month. This amount is lower than the consumption of rice income households medium and high, ranging from 25 pounds to 42 pounds per month.

TABLE I  
RICE CONSUMPTION IN RURAL HOUSEHOLD INCOME BY CATEGORY

No	Rice Consumption (kg/month)	% Household			Amount (%)
		Low Income	Medium Income	High Income	
1	7-24	56,7	43,3	26,7	42,2
	25-42	40,0	50,0	63,3	51,1
3	43-60	3,3	6,7	19,0	6,7
	Amount	100,0	100,0	100,0	100,0
	Average	22.53	26.63	30.33	26.50
	Average (kg/person/month)	8.89	9.08	9.68	9.24
	Average(kg/person/year)				110,8
		106.68	108,96	116,2	8

Low-income households who are poor households who do not have the ability to purchase sufficient quantities of rice more. Most respondents expressed that the amount of rice they consume actually their insufficient. In addition to food sources of carbohydrates they consume instant noodles and cassava. This is also reinforced by the opinions Yudohusono as in [5] showed that Indonesia is the second largest consumer of noodles after People's Republic of China. Noodle consumption in Indonesia in 1993 was 2.25 billion packs (equivalent to 68 516 tonnes) and to 3.54 billion packs (equivalent to 265 838 tonnes) in 1995. Now the rate of increase in consumption of noodles over 15 percent per year.

Table II shows the amount of rice consumption in urban household an average of 29.24 pounds per household per month or Rp 88.8 kilograms per person per year. Low-income households consume rice average of 27.38 pounds per month,

moderate-income households consume rice by 28.52 pounds per month, and high-income households consume rice by 33.44 pounds per month. This number shows that the higher the income level, the more rice is consumed. That is, high-income households have better accessibility to meet their basic food needs. The same phenomenon is also seen in rural areas.

TABLE II  
RICE CONSUMPTION IN URBAN HOUSEHOLD INCOME BY CATEGORY

No	Rice Consumption (kg/month)	% Household			Amount (%)
		Low Income	Medium Income	High Income	
1	10 - 25	47,4	36,7	27,3	42,2
2	26 - 41	42,1	33,3	45,4	40,0
3	> 41	10,5	20,0	27,3	17,8
	Amount	100,0	100	100,0	100,0
	Average	27.38	28.52	33.44	29.24
	Average (kg/person/month)	6.5	7.7	8.6	7.4
	Average(kg/person/year)	78	92,4	103,2	88.8

Slightly different phenomena seen from the research in [1] on the consumption of rice in Indonesia. The research concludes that a decline in rice consumption as income rises consumers in some areas in Indonesia except Maluku and Madura. In addition, the low household rice consumption at higher income levels due to the many outdoor activities that tend to choose fast food because it is more practical .. While most middle-income household and low income have also begun to consume noodles and cassava as a food substitute.

The research [13] showed that the average level household consumption of rice is equal to the population in Lubuklinggau 109.82 kg per capita per year. This is when compared with the data of Food Balance Sheets (NBM) and Dietary Pattern (PPH) of the Department of Food Crops, Forestry and Plantation Lubuklinggau City of 2007 at 119 kg per capita per year, then the tabulation has decreased by 9.18 kg per capita per year or by 7.71 percent.

In line with these results, as in [12] the City of Prabumulih showed that the average level household consumption of rice Prabumulih city is at 104.07 kg per capita per year. These results when compared with the level of rice consumption Prabumulih city people based on the data of Food Balance Sheets (NBM) and Pattern Hope Food (PPH) of the Agriculture Department Prabumulih of 2005 amounted to 131.15 kg per capita per year, then the tabulation has decreased by 27 , 08 kg per capita per year or by 20.65%.

When compared with the rate of consumption of rice in South Sumatra people of the Department of Crop and Horticultural South Sumatra in 2007 amounted to 124.104 kg per capita per year, and the national rate of rice consumption in 2007 was 139 kg per capita per year, then the average current consumption of rice has decreased.

If visits by the location, the results of this study indicate that there are differences in the level of household consumption of rice. Level of average rice consumption per capita of urban households is lower than the rate of rice consumption in rural household. This can be explained because in urban public education levels tend to be higher than in rural areas. This fact affects the public insight to a healthy diet, varied and nutritious. Children for intelligence purposes note that the

caloric needs of urban communities were not only filled with foodstuffs derived from rice but also other foods that support balanced nutrition. In addition to higher rice consumption in rural communities (local production) is also thought to be caused most people to produce their own rice it consumes.

In line with the research [12], indicates that there is a low level of rice consumption in the people the city center that is equal to 84.00 kg per capita per year, while suburban residents city was 122.67 kg per capita per year. To the level of rice consumption in rural areas is higher than in urban areas. This is because people in the City Prabumulih especially in the downtown has begun to recognize that the level of diversification of rice consumption is reduced. According to the research [15], the low level of rice consumption downtown people due to increased income people and people in many activities outside of the home, causing the center of the city people is likely to lead to a pattern of consumption of fast food or processed foods such as instant noodles or bread. Tendency downtown people choose noodles and bread, because the food is practical or easy to obtain instant and anywhere. Most suburban people have also begun to glance noodles instead of rice because the population of the city has begun to affect behavior in the suburbs in particular diet, although only a small fraction.

#### B. Household How to Get Rice

How to get rice household consist of two types, namely its own production and buying. Table III shows that the majority of households in rural areas to meet the rice needs through own production, as most of the rural population are rice farmers. But the results also show that for households with higher incomes, fulfilling its rice needs by buying. Observations and interviews in the field showed that the consumption of rice, higher income households consider the quality of the rice they consume, if the quality of the rice they produce less good, the rice was sold and they buy better quality.

TABLE III  
HOW TO GET RICE OF THE HOUSEHOLD IN RURAL AREAS

Income category	Low Income		Medium Income		High income	
	n	%	n	%	n	%
How to get rice						
Own production	20	66,7	19	63,3	5	16,7
To Buy	10	33,3	11	36,7	25	83,3
Amount	30	100	30	100	30	100

Different from rural household, how to get rice at household most of the urban areas (77.3%) is to buy. This can be explained because most urban communities have a primary job as private sector employees, only about 14.4% as farmers / farm workers.

#### C. Rice Quality Consumed By The Household

Quality of rice consumed by households is reviewed by the selling price of rice in the market. As mentioned previously, that the majority of households in rural areas to meet the needs

of its rice from own production. Type of rice consumed is generally IR 64 and Ciherang. Whereas households that meet its rice consumption of purchased, most (54.5%) to buy rice with good enough quality (Table IV). Even as much as 60 percent of high-income households consume rice with good quality. In terms of total household income, the results showed that there is a tendency to the good level of income of the rural population, the quality of rice consumed is also getting better.

TABLE IV  
RICE QUALITY THAT CONSUMED BY RURAL HOUSEHOLD INCOME

Income category	Low Income		Medium Income		High income	
	n	%	n	%	n	%
Own production	2	5,3	3	10	5	22,7
To Buy	36	94,7	27	90	17	77,3
Amount	38	100	30	100	22	100

Rice consumption behavior of urban households based on the quality of rice consumed, most (54.5%) chose rice with good enough category. If visits by income, low-income household most consume large poor quality rice, middle-income household consume rice with good enough quality, and high-income households consume rice with good quality. This suggests that with increasing levels of urban household income, quality of rice consumed is also getting better.

TABLE V  
RICE QUALITY THAT CONSUMED BY URBAN HOUSEHOLD INCOME

Rice quality	Low Income		Medium Income		High Income		Amount (%)
	n	%	n	%	n	%	
Low	0	0	0	0	0	0	0,0
quite well	9	90	11	100	10	40	54,5
Good	1	10	0	0	15	60	45,5
Amount	10	100	11	100	25	100	100

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Another phenomenon of the results of the study indicated as in [12], where the people consumes most of the downtown high-quality rice, although such sample household into the category of poor families. This phenomenon occur because people have become accustomed to the taste of the rice fluffier

they consume while the suburban people consumes rice with quality ranging from high quality rice to low quality.

TABLE VI  
RICE QUALITY THAT CONSUMED BY RURAL HOUSEHOLD INCOME

Rice quality	Low Income		Medium Income		High Income		Amount (%)
	N	%	n	%	n	%	
Low	15	41,7	4	14,8	1	5,9	25
Quite well	13	36,1	16	59,2	3	17,6	40
Good	8	22,2	7	26,0	13	76,5	35
Amount	36	100	27	100	17	100	100

#### D. Household Rice Consumption Expenditure

Table VII shows the amount of rice consumption expenditure of rural households the average is Rp. 147 02 per month. Both low-income households, middle-income, and high income, most have to consume rice expenditure ranged between Rp. 100,000 to Rp. 165,000 per month. There is a tendency that the higher the income, the expenditure for the greater consumption of rice. This shows that the rice is still the major staple food that must be met in rural household.

TABLE VII  
RICE CONSUMPTION EXPENDITURE IN RURAL AREAS BASED ON HOUSEHOLD INCOME LEVEL

No	Rice consumption expenditure (Rp)	% household			Amount (%)
		Low income	Medium income	High income	
1	35000 – 99999	40	0,0)	0,0)	13,3
2	100000 – 164999	46,7	50,0	46,7	47,8
3	165000 – 229999	13,3	33,3	40,0	28,8
4	230000 -294999	0,0	13,3	6,7	6,7
5	> 294999	0,0	4,6	6,7	3,3
	Amount	100,0	100,0	100,0	100,0
	The average expenditure of rice	116,81	148,79	175,45	147,02
	The proportion of rice expenditure (%)	9,8	3,5	1,3	2,3

Table VIII shows that the average rice consumption expenditure of urban households is higher, amounting to Rp. 224 921 per month. This is presumably because the number of household members in urban areas more, so much more in need of rice. Different from rural households, urban household have a tendency that with increasing levels of income, consumption of rice is getting smaller.

This condition is in accordance with Engel's Law which states that proporsasi household income allocated to buy food gets smaller with higher levels of income as in [5]. The research [14] showed that the increase in household income will increase the demand for food, so there was a trend toward reduction in demand for rice.

TABLE VIII  
RICE CONSUMPTION EXPENDITURE IN URBAN AREAS BASED  
ON HOUSEHOLD INCOME LEVEL

No	Rice consumption expenditure (Rp)	% household			Amount (%)
		Low Income	Medium Income	High Income	
1	75000 – 162666	42,1	46,7	13,6	36,7
2	162667 – 250332	26,3	20,0	36,4	26,7
3	250333 – 337999	21,1	20,0	31,8	23,3
4	338000 – 425666	10,5	13,3	9,1	11,1
5	> 425666	0,0	0,0	9,1	2,2
	Amount	100,0	100,0	100,0	100,0
	The average expenditure of rice	206,16	218,42	72,20	224,92
	The proportion of rice expenditure (%)	7,2	4,6	1,4	5,5

## V. CONCLUSION

Average rice consumption in rural household is higher than the average rice consumption in urban household. Most of the rural households get rice from own production, while urban households bought at the market or store. There is a tendency by the good level household income in both rural and urban areas, the quality of rice consumed is also getting better. For rural households, there is a tendency that the higher the income, the expenditure for the greater consumption of rice. The opposite occurs in urban households.

## ACKNOWLEDGEMENTS

The author would like to thank all those who have assisted in this study for their input and suggestions, the informants both primary and secondary.

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