THE ANALYSIS OF STAPLE FOOD SELF-SUFFICIENCY AND RICE FARMER HOUSEHOLD WELFARE LEVELS IN GORONTALO CITY

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ABSTRACT

The research aims at analyzing the condition of staple food self-sufficiency and the rice farmer household welfare level in Gorontalo City. The method used in this research was qualitative using a survey method. The samples were 66 of 1.101 rice farmers in Gorontalo City. The technique of data analysis employed was the Rice Balance Sheet analysis and Farmer Household Income Exchange Rate (NTPRP) approach. Findings reveal that the condition of staple food self-sufficiency in Gorontalo City had reached the sufficient category at a rice balance sheet of 730 kg/month and that the rice consumption rate per capita of paddy farmer households was in the average of 55 kg/month. Meanwhile, the Farmer Household Income Exchange Rate (NTPRP) in Gorontalo City was 2,75 kg/month. Referring to the national NTPRP welfare criteria that the welfare of farmers was achieved when NTPRP > 1, thus in the aggregate economy, paddy farmer households in Gorontalo City had been prosperous.

Keywords: Food Self-sufficiency, Farmer Household Welfare

INTRODUCTION

The law on the protection of sustainable food farmland, i.e., Law Number 41 of 2009 on Protection of Sustainable Farmland and implementing regulations, mandates both the central and local governments to carry out their duties regarding public welfare by protecting sustainable food farmland and formulating incentives and disincentives in the form of legal instrument making. The local government, concerning the protection of sustainable food farmland, needs to make and integrate policies that protect sustainable food farmland into the local regulations on regional spatial planning, which is subsequently derivated from the local regulations on the protection of sustainable food farmland. By these policies, land function transfer can be averted, and food agriculture land can be developed to be perennial farmland to manifest food self-sufficiency and food security.

The provisions on the protection of sustainable food farmland are intended to protect certain farmlands from unsuitable food agricultural activities. They should be supported by regulations relevant to land authority and ownership so that the land authority and ownership can be efficiently and equally distributed. Also, the areas of land cultivated can be adequately developed, ensuring the farmer family welfare and sufficient food production.

Seasonal food crises continued to happen when macroeconomic factors interfered (Darsono, 2009:40). At other times, in terms of the consumption level

of rice as a staple food, Indonesia was ranked first at 169 kg/capita/year in Asia at an average per capita of less than 100 kg/year (Statistics Indonesia, 2010:2012). National programs to achieve food self-sufficient are racing against food stable insecurity bred by multi factors, e.g., uncontrollable population growth, a decreasing trend of staple food commodity productivity and opportunity for energy, and political issues. The programs seem to be trapped in a policy logic that is macro-aggregation by nature and hence become perennially ineffective to manifest staple food security. Accordingly, it is crucial to find the pitfalls underlying the event to formulate policies for a household level.

As such, analyzing staple food security at a household level is important to figure out local specific dynamics of staple food self-sufficiency and as a result, the government can formulate thorough policies on staple food security. Additionally, farmers as the producers of food staple commodities, have been indicated to be threatened by staple food self-insufficiency.

Gorontalo is one of the provinces with potential rice farm business development, supported by its farm area of 63,198 ha spread in six districts/cities producing 331,220 tons of rice. Rice constitutes one of the staple foods and carbohydrate sources besides corn, sweet potatoes, and cassava. Therefore, rice commodity becomes increasingly pivotal. The largest farm area in Gorontalo Province is in Gorontalo District, with an area of 29,817 ha or 47.18% of the total farm areas in the province. Meanwhile, the smallest one is also in the same district and the area is 1,614 ha or 2.60% of the total farm areas.

Gorontalo District is one of the districts in Gorontalo Province. It is 67.07 km^2 by area or 0.65% of the total area of Gorontalo Province. The population living in the district is 199,767 at a population growth rate of 2.10%. Furthermore, it has a farm area potency with technical irrigation. The farm area in 2017 was 833 ha at a production rate of 223.06 tons (Statistics Indonesia, 2019). Most farmers in Gorontalo City concentrate on cultivating rice, and the rest choose corn cultivated in an area of 24 ha, and other commodities, such as lading rice, cassava, sweet potatoes, soybean, peanut, and green bean.

According to the 2016 data from the Food and Nutrition Precautions System (SKPG), of 77 subdistricts in Gorontalo Province, 44 were in the food insecurity category because of a low production rate of crops, e.g., rice, corn, and tubers (Food Service, 2017). Moreover, all subdistricts, which are nine by number, are in the food insecurity category due to the increasingly narrowed farm area there. Based on the 2017 data from Statistics Indonesia, the farm area in Gorontalo City declined annually owing to land function transfer cases. Farm areas in urban areas, anytime, can be altered to be shopping areas, offices, residential areas, industrial areas, or other recreational areas, which are considered more profitable than agricultural businesses. In 2010, we could find farm areas of 916 ha in Gorontalo City but in 2019, the

areas had decreased by 833 ha. It indicates that within nine years, the farm areas had decremented by 83 ha. Land function transfer is thus one of the inevitable problems for farmers.

Meanwhile, the farmer household food security rate in Gorontalo City is in an insecure state at 60.43%. However, from the perspective of regional division, the outermost and transitional areas indicate a food security state. Contrastively, the city center area indicated a food insecurity condition at a score of ≥ 60% (Paputungan *et al*., 2018:61).

This research thus aims to examine the staple food self-sufficient and rice farmer household welfare levels in Gorontalo City.

LITERATURE STUDY

Food and Farmer Household Food Self-sufficiency

According to *Kamus Besar Bahasa Indonesia*, *Pangan* was defined as food everyone put hope on (Department of Education and Culture, 1999:723). Additionally, based on literature we found, food is all ingredients daily eaten to maintain, develop, operate, and substitute damaged body tissues (Suhardjo, 1996:40).

With respect to the formal definition, food, as described in Article 1 Number (1) of Law on Food, is all matters derived from biological resources and water, either processed or unprocessed, intended to be consumed by human beings as meals or beverages, and include food additives, food raw materials, and other materials used in the preparation, processing, and/or making processes. The same explanation of food can be found in Article 1 Paragraph 1 of the Government Regulation on Food Labels and Advertisements as well as Article 1 Paragraph (1) of the Government Regulation on Food Security, Quality, and Nutrition.

The Food and Agriculture Organization (FAO) defined food security as a condition where all people had secure and nutritional food, allowing them to live healthily and actively (FAO, 1996:7). As such, to realize food security, the availability of secure and nutritional food, either in terms of quantity and quality, must be ensured and the food affordability and accessibility for enabling all society levels, either the poor and rich, men and women, or the young and the elder must be guaranteed. Different issues remain to be resolved to manifest food security. At the national level, the issues are embodied by the decreasing trend of food per capita production, specifically in crop and horticultural production. The trend commonly hits ahead of and during crises.

Rice Farmer Household Welfare Levels

Farmer welfare levels needed to be investigated from the perspective of the increase of the amount of farmer expenditure for either consumption or production (Dercon and Krishnan, 1996:43). Here, as producers and consumers, farmers confronted two-income allocation options, i.e., firstly, to fulfill their primary needs (consumption) and thereby sustaining their family as well and secondly, to be invested in

agricultural production/cultivation, on which they depended. The allocation covered operational production costs, investments, and the formation of capital goods, which are the determinants of farmer welfare levels (Food Security Council and World Food Program, 2005; Food Security Council, 2006:202).

Rahmat (2000), in Sugiarto (2008:123), argued that the indicators of farmer welfare with NTP could be achieved using varied approaches in accordance with farmer need levels. One of the NTP approaches is the Farmer Household Income Exchange Rate (NTPRP), which is the ratio of total household income and total household expenditure. Total agricultural household income is derived by summing up all agricultural commodity production values earned by farmers, agricultural labor values, non-agricultural production values, non-agricultural labor values, and so on. Meanwhile, farmer expenditure is identified by summing household consumption expenditure and production cost expenditure.

Food subsistence levels at household levels can indicate the indicators of farmer welfare. The higher the household (self-production) food subsistence level, the higher the opportunity for fulfilling the family needs for food or the more the household food supplies (the higher the food security level). It indicates the increasing welfare of farmer households concerned. Food Subsistence Levels (TSP), according to Sudana *et al*. (2007:930), were categorized into three, which were TSP = 1: subsistent, TSP > 1: surplus, and TKP < 1: the deficit.

Farmer welfare levels, defined by SUSENAS (2016), were the quantification of the analysis of all data in each welfare indicator, which all connected to the socio-economic condition of farmer households. The indicators had been elucidated and explained for their scores. Subsequently, all scores are calculated as a whole from all respondents. Welfare levels are classified into three, i.e.:

1. A score of 27-35 (high)
2. A score of 19-26 (medium)
3. A score of 11-18 (low)

RESEARCH METHODS

Data Types and Sources

Primary data were collected from respondents, namely rice farmers in Gorontalo City. Moreover, secondary data were collected from other sources which had processed and presented the data in the form of reports, research, journals, and books.

Data Collection Techniques

1. Observation

We observed the situation of the research location, especially regarding staple food self-sufficiency and rice farmer household welfare in Gorontalo City.

2. Interview

Through interviews, we collected data regarding staple food self-sufficiency and rice farmer household welfare in Gorontalo City.

3. Questionnaire

We used a questionnaire technique to collect data by proposing written questions to be discussed by

respondents. The questions addressed staple food self-sufficiency and rice farmer household welfare in Gorontalo City.

Population and Sample

The research population was 396 people with the highest number of farmers and the widest farm areas. Sampling was conducted using the cluster random sampling technique. We successfully collected 66 rice farmers as research samples. They lived in the villages with the highest farmer population in the subdistricts with the highest farmer population in Gorontalo City.

Data Analysis Technique

1. Food self-sufficiency analysis

The food discussed in this research was rice. We measured household food self-sufficiency levels using a rice balance sheet (NB) formula (Darsono, 2012b; Bakri, 2009; Sugiarto, 2008).

$$NB = S - D$$

Where:

S = the amount of monthly rice production

D = monthly household rice consumption

The balance between Supply (S) and Demand (D) had three levels:

a. Surplus/food security (S was higher than D, the value of NB > 1)
b. Balanced (S = D, the value of NB = 1)
c. Deficit/food insecurity (S was lower than D, the value of NB < 1)

2. Farmer Household Income Exchange Rate (NTPTP)

Farmer exchange rate as the approach to farmer welfare measurement measured the capability of the exchange of agricultural products produced by farmers with products/services consumed by farmer households and what they needed to generate agricultural products. In this research, NTP was observed using the farmer household income exchange rate (NTPTP) (Sugiarto, 2008:29).

NTPRP constituted a balance between household total income (Y) and household total expenditure (E) measured using the following formula:

$$\mathbf{NTPRP} = \frac{\mathbf{Y}}{\mathbf{E}}$$

Where:

Y = YP + YNP

E = EP + EK

YP = the total agricultural business income (Rupiah/hectare/month)

YNP = the total non-agricultural business income (Rupiah/hectare/month)

EP = the total production expenditure (Rupiah/hectare/month)

EK = the total consumption expenditure (Rupiah/month)

Welfare criteria in accordance with NTPRP were:

NTPRP > 1: welfare

NTPRP = 1: unchanged welfare

NTPRP < 1: no welfare

3. Income Criteria by Sajogyo

Sayogya exerted an equivalent rice kilogram unit to determine the criteria for the poverty line. He then made four community clusters as follows.

Table 1. Poverty Level Measurement by Sajogyo

No.	Predicate	Income	Location
1	Very poor	At the bottom equal to 240 kg of rice	Rural areas
		At the bottom equal to 360 kg of rice	Urban areas
2	Poor	Equal to 240-320 kg of rice	Rural areas
		Equal to 320-480 kg of rice	Urban areas
3	Near poor	Equal to 320-480 kg of rice	Rural areas
		Equal to 480-720 kg of rice	Urban areas
4	Moderate	Equal to more than 480 kg of rice	Rural areas
		Equal to more than 480 kg of rice	Urban areas

Source: Ricky Iswar et al. *(2000) in Sukidjo (2009:160)*

Sunyoto Usman, in Sukidjo (2009:160), clarified two perspectives used in the study of poverty. They were a culture perspective and situational perspective.

a. Using a cultural perspective, the analyses of poverty were categorized into three levels. At an individual level, poverty was marked by a strong feeling of marginalities, such as apathy, fatalism, or surrendering to fate, extravagance, dependency, and inferiority. At a family level, it was marked by many family members. At a community level, it was marked by the event when the poor were not effectively integrated into community institutions.
b. From a structural perspective, poverty was marked by no access to public facilities, political processes, and political power, giving them the lowest social structure.

FINDINGS AND DISCUSSION

A. Staple Food Self-sufficiency in Gorontalo City

The food intended in this research was rice. To measure household food self-sufficiency levels, we used the rice balance sheet (NB) formula (Darsono, 2012b; Bakri, 2009; Sugiarto, 2008) and generated the amount of 730 kg/month. Staple food balance was figured out using the rice balance sheet. By a means of the rice balance sheet, we quantified the amount of production, consumption, and rice surplus/deficit in the last one month and at the last planting period. Rice farmer households in Gorontalo City had a surplus rice balance sheet at an average of 730 kg/month.

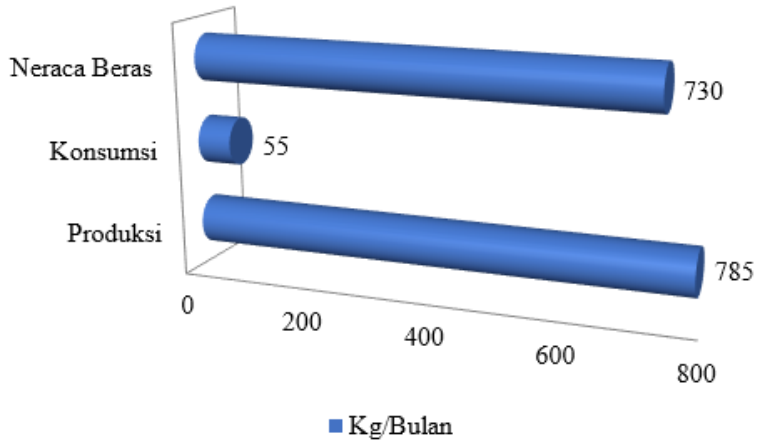

Figure 1. The Monthly Rice Balance Sheet of Rice Farmer Households in Gorontalo City, 2020

If it was the amount of stock possessed by farmers in Gorontalo City, they thus had sufficient staple food or rice. However, the large quite large surplus had to be on sale to fulfill non-agricultural family needs, which were higher by quantity than the needs for staple food. The average per capita rice consumption level of rice farmer households in Gorontalo City was 55 kg/month.

Most heads of households, as the people in charge of family support, were aged 45.5 years old and had seven years of education (primary school graduates). Heads of households who worked as full-time farmers were 68.1% and those with side non-agricultural jobs were 31.8%. The average household income of rice farmers in Gorontalo City in the last month was IDR6,910,436.00. The amount was much higher than the monthly regional minimum wage (UMR), i.e., IDR2,586,900.00 (Gorontalo Province, 2020). Referring to the finding, the government should more activate agricultural sectors and thereby drawing the interests of young workers in the sectors.

Our findings regarding staple food self-sufficiency levels in Gorontalo City were aligned with Darsono (2014). He found out that the rice balance sheet of rice farmer households in Solo Raya was sufficient or even surplus by status at an average production of 906.77 kg/capita/growing season per 1 hectare of rice cultivation. It was identified that the rice balance sheet of rice farmer households in Solo Raya per 1 hectare of rice cultivation was surplus at an average production of 2,720.3 kg/capita/year. If the amount was the rice stock stored by farmers in Solo Raya, the farmers had achieved (rice) food staple self-sufficiency. However, the large quite large surplus had to be on sale to fulfill non-agricultural family needs, which were higher by quantity than the needs for staple food. It was aggravated by a low farmer exchange rate. The average farmer household rice consumption level in Solo Raya was 96.8 kg/capita/year. That amount of rice consumption was much lower than the national one, i.e., 136.7 kg/capita/year (National Food Security Agency, 2012).

B. Rice Farmer Household Welfare Levels in Gorontalo City

1. Farmer Household Income Exchange Rate (NTPRP)

One of the approaches to the Farmer Exchange Rate was Farmer Household Income Exchange Rate (NTPRP), which was a balance between total household income and total household expenditure. Total agricultural household income was derived by summing up all agricultural commodity production values earned by farmers, agricultural labor values, non-agricultural production values, non-agricultural labor values, and so on. Meanwhile, farmer expenditure was identified by summing household consumption expenditure and production cost expenditure.

Farmer exchange rate as the approach to farmer welfare measurement measured the capability of the exchange of agricultural products produced by farmers with products/services consumed by farmer households and what they needed to generate agricultural products. In this research, NTP was observed using the farmer household income exchange rate (NTPRP) (Sugiarto, 2008:29).

The average household income of rice farmer households in the last month of the last growing season IDR5,548,314.00. Meanwhile, the average household expenditure of rice farmer households in Gorontalo City was IDR2,015,776.00. The NTPRP of rice farmer households in Gorontalo City was thus 2.75 kg/month. Referring to the national welfare criteria of NTPRP that farmer welfare was achieved at NTPRP > 1, accordingly, in the aggregate economy, rice farmer households in Gorontalo City had achieved welfare.

2. Poverty Criteria by Sojogyo

According to Sajogyo, welfare measurement was based on poverty line criteria. The criteria were very poor households, poor households, near-poor households, moderate households.

Rice farmer household poverty levels were measured by quantifying monthly expenditure identified using the standard price of rice per kilogram in the research location and during the research. Household expenditure was categorized into food expenditure and non-food expenditure. We figured out that the average production of rice in Gorontalo City was 785 kg/month, indicating that rice farmer households there had manifested rice food security.

The finding was in accordance with Alfrida (2018) who analyzed welfare levels of rice farmer households using several indicators and found different welfare levels. When using the economic indicator, she identified poor farmer households. However, exerting the socio-economic indicator, she presented the result that all farmer households had achieved a high welfare level.

Rice farmer household welfare levels in Gorontalo City were examined using two welfare criteria, i.e., Farmer Household Income Exchange Rate (NTPRP) and poverty criteria by Sajogyo. Both approaches delineated that rice farmer households in Gorontalo City had achieved welfare.

CONCLUSIONS

1. Gorontalo City had achieved staple food self-sufficiency at the rice balance sheet of 730 kg/month and the average per capita rice consumption level of rice farmer households in Gorontalo City was 55 kg/month.
2. The NTPRP of rice farmer households in Gorontalo City was 2.75 kg/month. Referring to the national welfare criteria of NTPRP that farmer welfare was achieved at NTPRP > 1, accordingly, in the aggregate economy, rice farmer households in Gorontalo City had achieved welfare.

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