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Analysis of the Exchange Rate of Income and Welfare of Dryland Farming Households in Sekotong District, West Lombok Regency

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A B S T R A C T

This research has two main objectives. First, to analyze the amount of income and spending patterns of farmer households in Sekotong District. Second, to study the income exchange rate and the level of welfare achieved by farmer households in the same location. The method applied in this study is descriptive. The sampling technique used quota sampling with a total of 30 respondents, while the determination of farmers as respondents was carried out by accidental sampling. The collected data was analyzed by calculating the income, expenditure, and exchange rate of farmers' household income. The findings of the study revealed that: 1) The average household income of dryland farmers in Sekotong District reached Rp31,541,885.83 per year, which was sourced from various sectors. The on-farm sector contributed the most, at 39.23%. Meanwhile, the average household expenditure of IDR 34,700,312.57 per year is allocated for farming needs, food consumption, and non-food. 2) The result of the calculation of the Farmer Household Income Exchange Rate (NTPRP) in Sekotong District is 0.91. This figure is below 1, which indicates that the level of welfare of dryland farmers in the region is still relatively low.

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INTRODUCTION

Sustainable development in Indonesia has a complex dimension, encompassing not only economic, social, and domestic environmental aspects, but also its linkages to international relations. This context is increasingly challenging with various environmental pressures, such as deforestation, declining biodiversity in both terrestrial and maritime ecosystems, and the rate of extinction of biological resources that have exceeded tolerance limits. This situation is further exacerbated by the impact of climate change, pollution, ocean acidification processes, and overexploitation in coastal areas. Various fundamental transformations in these natural resources ultimately lead to the degradation of the quantity and quality of strategic environmental resources. Therefore, today's development imperatives demand strengthening through a commitment to sustainable principles, with an emphasis on the provision of agricultural facilities and infrastructure. This aims to ensure that every development policy formulation always balances economic, social, and environmental interests in a proportionate manner (Ministry of Agriculture, 2014).

Efforts to improve the welfare of farmers in Indonesia have been realized through the implementation of various programs by the Government. Among these policies, the food self-sufficiency program occupies a strategic position that is implemented in a sustainable manner. Rice is designated as one of the priority commodities in this program. The expectation is to achieve two main goals: increasing national rice production and improving the income level of rice farmers, especially in dryland agricultural areas (Muis et al., 2023).

The agricultural sector plays a strategic role in supporting the economy and national development, which is reflected in its contribution to the Gross Domestic Product (GDP). In 2022, this sector contributed 13.57% to Indonesia's GDP (BPS Indonesia, 2023). Furthermore, agriculture functions as a source of foreign exchange through export activities, as well as plays a vital role in the absorption of labor and the fulfillment of the basic needs of the population, namely food and clothing.

As stated by Indraningsih et al. (2005), an agricultural development orientation that aims to improve the welfare of farmers makes evaluation of the impact of development a crucial thing. This kind of study is important to produce constructive input to improve agricultural development policies in the future. In the context of the evaluation, one of the quantitative indicators commonly used to measure the level of farmers' welfare is the Farmer Household Income Exchange Rate (NTPRP). According to Nirmala et al. (2016), NTPRP essentially represents a comparison between the income earned by farmers from the sale of their produce and the expenditure incurred to buy goods and services. Thus, NTPRP functions as a measuring tool that assesses the ability of the exchange rate of agricultural products produced by farmers for various goods and services needed, both for household consumption and as input in the agricultural production process.

The ability of the agricultural sector to contribute directly to economic growth and the welfare of farmer households depends on the level of farming

income and the surplus generated by the sector itself. Thus, the level of farming income, besides being the main determinant of the welfare of farmers' households, also emerged as one of the important factors that condition economic growth. With the orientation of agricultural development towards improving the welfare of development actors, namely farmers, one of the measuring tools that can be used to see the dynamics of the level of welfare is the Agricultural Exchange Rate(Riyadh et al., 2015).

The agricultural sector plays a dominant role in Indonesia's employment structure, in line with its characteristics as an agrarian country. Data from the Central Statistics Agency (BPS) in 2023 revealed that the number of agricultural households reached 28,419,398, which increased by 2,293,198 households when compared to data in 2013. The large proportion of farmer households reflects the significance of the agricultural sector as a labor absorber. The majority of agricultural activities are concentrated in rural areas with the main orientation on cultivation activities (on-farm). Based on these conditions, development efforts that focus on increasing farmers' income are relevant and strategic. The implication is that improving the welfare of farmers occupies a central position in every phase of agricultural development. Operationally, this effort is realized through a series of policies and programs aimed at increasing production, maintaining food supply stability, and encouraging increased income and welfare of farmers (Rachmat, 2013).

The economic structure in Sekotong District is still agrarian with the use of non-technical irrigated rice fields and rainfed rice with a palawija rice planting pattern. 706.73 Ha of rice fields with non-technical irrigation and 2,334 Ha of rainfall, agricultural land is dominated by uncultivated land or dry land. Thus, it can be said that the farming community in Sekotong District is very dependent on the agricultural sector from farming activities. It is hoped that this agricultural sector can be a growth engine that is able to increase the income and welfare of farmers. From the description above, the urgent question to be answered is whether the implementation of the development of the agricultural sector that has been carried out by the government in Indonesia, including in Sekotong District, is able to prosper farmers? One of the measuring tools that can be used to determine the welfare of farmers is by measuring the Farmer Household Income Exchange Rate (FHIXR) (Wieta B Komalasari, et. al., 2021). FHIXR is the ratio of the price index received by farmers to the price index paid by farmers. Conceptually, NTPRP is a measure of the ability to exchange agricultural products produced by farmers with goods or services consumed by farmers' households and goods or services needed to produce agricultural products(Riyadh et al., 2015). This study aims to 1) determine the income and expenditure of dryland farmers households in Sekotong District. 2) To find out the income exchange rate and welfare of dryland farmers households in Sekotong District.

THEORETICAL REVIEW

Agricultural development plays a crucial role in supporting the national economy, particularly in providing food, industrial raw materials, and creating jobs (BPS Indonesia, 2023). According to the Ministry of Agriculture (2014), the direction of modern agricultural development needs to focus on a balance between economic, social, and environmental aspects to achieve sustainable development.

Farmer welfare is the primary goal of agricultural development. (Rachmat, 2013b) emphasized that farmer welfare must be an indicator of the success of agricultural development. Conceptually, farmer welfare can be measured through income, consumption, and the ability to meet basic living needs. A study by Maridjo & Mudayen (2023) found that land area, labor force, and agricultural product prices significantly influence farmer welfare in Indonesia.

The Farmer's Exchange Rate (NTP) is defined as an economic indicator that measures the ratio of the price index received by farmers (It) to the price index paid by farmers, both for household consumption and production costs (Ib). Through this comparison, the NTP serves as a barometer for analyzing the purchasing power and welfare of farming households in a region (Riyadh et al., 2015).

This concept was later developed into the Farmer's Household Income Exchange Rate (NTPRP), which is more comprehensive because it includes on-farm, off-farm, and non-farm income, as well as all household expenses (Alfrida & Noor, 2017). If the NTPRP value is >1, the farmer is considered prosperous, while a value <1 indicates that the farmer is not prosperous (BPS Indonesia, 2023).

Farmer household income comes from various sources, such as on-farm activities, off-farm agricultural work, and non-farm work (Sari et al., 2014). Diversifying income sources is an adaptive strategy for farmers in facing the risks of price fluctuations and crop yields. However, off-farm income also plays a crucial role in maintaining household economic stability, especially during lean seasons or when crop yields decline (Nurminda et al., 2024).

Food expenditures include all costs incurred by households to purchase daily food and beverages, such as rice, side dishes, vegetables, fruit, and drinks. The proportion of food expenditure is often used as an indicator of welfare. Engel's Law explains that the higher a person's income, the smaller the proportion of income allocated to food expenditures (Nirmala et al., 2016). Thus, households that still allocate a large portion of their income to food indicate a relatively low level of welfare.

Non-food expenditures include all household costs not directly related to food consumption, such as education, health, housing, transportation, communication, energy (electricity and gas), clothing, and social and customary activities. According to household welfare theory, an increase in the portion of non-food expenditures indicates an increase in quality of life because it reflects the household's ability to access public services and improve living standards (Rachmat, 2013b). Furthermore, Nirmala et al., (2016) added that high food

expenditures also affect the household's ability to allocate funds for education and health. This causes a vicious cycle (poverty cycle), where low income leads to high consumption expenditures and suppresses the potential for long-term welfare improvements.

METHODOLOGY

This research was carried out in Sekotong District, West Lombok Regency. The location determination was carried out purposively with the consideration that this area is one of the areas that has the most significant dry land area. The sample in the study amounted to 30 respondents, which was determined by applying the quota sampling technique. The appointment of farmers as respondents is specifically carried out through the accidental sampling method. The data collected are qualitative and quantitative, which are sourced from primary and secondary data. The primary data collection technique was carried out through direct interviews.

According to (Sari et al., 2014) To be able to calculate the income obtained by a farming household, it can be calculated with the following formula:

Pd = Pdon + Pdoff + Pdnon + Pdsbrln

Information:
Pd = Total Household Income of Rice Farmers
(Rp/month)
Pdon = Income from Farming (Rp)
Pdoff = Income from outside farming (Rp)
Pdnon = Income from outside farming (Rp)
Pdsbrln = Income from outside usahtani (Rp)

To find out the total household expenditure of farmers, you can calculate food and non-food costs using the following formula:

TP = Pp + Pn

Information:
TP = total Expenses
PP = Food expenditure (Rp)
PN = Non-Food Expenditure
(Alfrida & Noor, 2017) (Alfrida & Noor, 2017)

NTPRP = Y/E

Where:
Y = Yp + YNP
E = Ep + EK
Information:
NTPRP = Farmer's Household Income Exchange Rate
Y = Revenue
E = Production
Yp = Total income from agricultural business

YN= Total income from non-agricultural businesses
Ep = Total expenditure on agricultural business
EK = Total expenditure for non-agricultural businesses

Decision-making is as follows:
- NTPRP > 1 means that farmers experience a surplus, that is, farmers' income is greater than the expenditure or level of farmers' welfare is included in the group prosperous.
- NTPRP < 1 means that farmers experience a deficit, i.e. smaller farmers' income of production or the level of well-being of farmers has not been included in The Unfortunate Ones.

DISCUSSION

Household Income of Dryland Farmers

The total income of dryland households in Sekotong District is sourced from on-farm, off-farm, non-farm, and other sources of income shown in the following table.

Table 1 Total Household Income of Farmers in Sekotong District in 2024.

No.	Sources of Income	Sum	Percentage (%)
1	On-Farm	12.373.885,83	39,23
2	Off-Farm	8.668.000,00	27,48
3	Non-Farm	5.520.000,00	17,50
4	Other Resources	4.980.000,00	15,79
	Total	31.541.885,83	100,00

Source : Primary Data Processed 2024

The highest contribution to the household income of dryland farmers is from On-farm activities, which is Rp. 12,373,885.83 or 39.23% of total income. When viewed from the source of income of farmer households, it is the largest of on-farm activities because it is the main source of livelihood of farmer households. While other activities are side jobs.

The household income structure in the table shows that the On-Farm agricultural sector is still the backbone of the economy, accounting for 39.23% of total income. However, Non-Farm and Other Source income also plays an important role in diversifying and stabilizing family income, especially in the face of uncertainty in agricultural yields. Dryland farming business generates income, among others, from food crops and livestock. Apart from the livestock business, people can earn income from working as farm laborers. However, non-agricultural income comes from work as laborers, work as security guards, and additional sources of income such as government social assistance and family remittances.

Income from Farming (On Farm)

(Datau et al., 2019) (Datau et al., 2019)

Rice farming on dry land is the main commodity for farmers for on-farm income, with the largest contribution of 39.23 percent of household income. Although it shows a contribution that is not so large, farmers still depend on rice as their main source of income. Because the rice he produces is the staple food of farmers and their families. As a crop that produces staple food, farmers prioritize rice farming.

All households consume rice every day, therefore it is very needed, but the supply and productivity of rice are low or unbalanced. While the price of rice in the market is very high, the price of rice at the farmer level is very low. In addition, unclear prices of pesticides, fertilizers, and seeds are another problem for farmers, leading to very high production costs. Sometimes, the costs incurred by farmers are higher but their net income is lower, which means that most farmers have a low level of economy

Meanwhile, the production costs and income of farmers on dry land in Sekotong District are shown in the following table;

Table 2. On Farm Income of Farmer Households in Sekotong District in 2024.

No.	Description	Value
1	Production (kg)	2.738,33
2	Price (Rp)	6.000,00
3	Admission (Rp)	16.430.000,00
4	Production Costs	4.056.114,17
	Income	12.373.885,83

Source : Primary Data Processed 2024

Table 1 shows that the average production produced by farmers in rice farming on dry land is 2,738.33 kg/LLG using the prevailing price at the farmer level of Rp 6,000/kg, so a revenue of Rp 16,430,000.00/LLG is obtained. The revenue is then deducted from production costs of IDR 4,056,114.17/LLG, so income of IDR 12,373,885.83/LLG can be obtained (Nurminda et al., 2024).

Income from Outside Farming (Off Farm)

Empirically, the contribution of the agricultural sector to the income of the majority of farmer households is still significant. However, the limited land ownership that is on average narrow-scale encourages the diversification of livelihoods into activities outside of farming. To meet household needs, many farmers turn to the off-farm sector, such as working as farm laborers or raising livestock, as well as to the non-farm sector, for example by becoming construction workers.

Table 3 Off Farm Income of Farmer Households in Sekotong District in 2024.

No.	Description	Value (Rp/Year)
1	Farm Workers	2.964.000,00

2	Breeders	4.984.000,00
	Total Revenue	7.948.000,00

Source : Primary Data Processed 2024

Table 3 shows that the household income of dryland farmers is Rp. 7,984,000.00 per year with the contribution from livestock farming of Rp. 4,984,000.00 greater than the activities of farmer. Livestock farming activities on dry land are very promising because they are supported by the availability of land for grazing and the availability of feed from crops. Livestock can also be used to help farmers in the process of cultivating the land. Meanwhile, for farm workers, it is usually carried out at the same time as farming activities so that farming activities do not use enough labor from within the family, so farm workers are very important in helping farmers complete their farming activities.

Income from Outside Farming (Non Farm)

Dryland farmers who work as construction workers, carpenters and stonemasons, and security guards are some of the sources of income of non-farmers. Construction workers contributed the largest contribution, amounting to Rp. 2,520,000.00 of the total income of non-farmers, and security guards contributed the smallest contribution, amounting to Rp. 640,000.00.

Table 4 Non-Farm Income of Farmer Households in Sekotong District in 2024.

No.	Description	Value (Rp/Year)
1	Laborer	2.360.000,00
2	Craftsman	2.520.000,00
3	Security	640.000,00
	Total Revenue	5.520.000,00

Source : Primary Data Processed 2024

Table 4 shows that farming households in Sekotong District are predominantly engaged in the informal sector, such as construction workers and craftsmen. Meanwhile, only a few households work as security guards at tourist attractions. As noted by Nurminda et al. (2024), reliance on non-farm income is a survival strategy for households in dryland areas, especially when land productivity is low and access to agricultural inputs is limited.

Income from Other Sources

Income from other sources is very important, especially for dryland farmer households, due to low income levels and limited economic capabilities. The government is in an effort to reduce the poverty rate in rural areas through subsidy programs in the form of social assistance (bansos) such as Raskin PKH and special social assistance, namely reducing stunting rates.

Table 4. Other Sources of Income of Farmer Households in Sekotong District in 2024.

No.	Description	Value (Rp/Year)
1	RASKIN	660.000,00
2	PKH	800.000,00
3	BANDS	440.000,00
4	Family posts	3.080.000,00
	Total Revenue	4.980.000,00

Source : Primary Data Processed 2024

Q Table 4 shows that income from other sources for dryland farming households in Sekotong District is IDR 4,980,000.00 per year. The highest contribution comes from remittances from family members working elsewhere, such as in Japan as migrant workers. Remittances from these family members are very important for farming households, as they are very helpful, especially during the lean season, considering that most farming households can only grow food crops as a staple food source for most of them once a year. This is also supported by Datau et al., (2019b) who stated that farming households in marginal areas such as drylands tend to rely on remittances from family as their main source of income when income from farming is unstable. This income is not fixed, but has a significant contribution in covering the deficit in household consumption and expenditure, and can function as emergency capital when needed.

Total Expenditure of Dryland Farmer Households

The income earned by farming households, both from on-farm and off-farm activities, is allocated primarily to meet basic household needs. These basic needs include clothing, food, board, health services, and job creation. Specifically for dryland farmer households, the income allocation is classified into two main categories, namely food consumption and non-food.

Table 5 Total Farmer Household Expenditure in Sekotong District in 2024.

No.	Production	Value (Rp/Year)	Percentage (%)
1	Food	23.071.800,00	75,29
2	Non Food	7.572.398,40	24,71
	Total	30.644.198,40	100,00

Source : Primary Data Processed 2024

Table 5 shows the proportion of household food expenditure of dryland farmers at 75.29% while 24.71% is used for non-food expenditure. This means that farmer households from the income obtained are allocated more for food needs.

Farmers' Household Food Production

Household consumption is a term that refers to the expenditure to purchase final goods and services to meet a person's needs and wants. High-income households tend to consume high, while low-income households tend to consume low.

Table 5. Food Distribution for Farmers' Households in Sekotong District in 2024

No.	Foodstuff Group	Production (Rp/Year)	Percentage (%)
1	Rice	3.888.000,00	16,85
2	Daging	1.440.000,00	6,24
3	Ayam	2.100.000,00	9,10
4	Fresh Fish	3.970.800,00	17,21
5	Salted Fish	189.000,00	0,82
6	Egg	1.728.000,00	7,49
7	Vegetable Fish	745.800,00	3,23
8	Vegetable	385.200,00	1,67
9	Fruit	1.380.000,00	5,98
10	Coffee	2.685.000,00	11,64
11	Gula	1.920.000,00	8,32
12	Rokok	2.640.000,00	11,44
	Total	23.071.800,00	100,00

Source : Primary Data Processed 2024

At 5, the highest proportion of food expenditure is for rice, as much as 16.85%, while for the lowest expenditure, namely salted fish as much as 0.82% of the total expenditure on food. The high expenditure on the purchase of rice as a staple food source is the main component in energy fulfillment, considering that farmers' activities on their farmland are quite intensive and require high physical work.

The results of this study also highlight the purchase of food in the form of salted fish and vegetables with the lowest proportions, namely 0.82% and 1.67% of farmers' household food expenditure. This condition is because salted fish is rarely consumed by people in rural areas, except when the price of fresh fish is expensive, so households switch to consuming salted fish. Likewise, the consumption of vegetables in a low proportion is due to the habits of farmers in the countryside, in addition to buying at the market or stalls around their residences, also vegetables are obtained from the produce of the garden or yard and even from neighbors

Non-Food Production of Farmers' Households

Non-food consumption of Rp 4,840,800 per year is farmers' expenditure on things other than food, such as education, clothing, health, housing, transportation, and activities such as social gatherings and traditional events. The

results show that the amount of food expenditure is greater than that of non-food expenditure.

Table 6 Non-Food Expenditure of Farmer Households in Sekotong District in 2024.

No.	Kelompok Bahan Non Pangan	Pengeluran (Rp/Tahun)	Persentase (%)
1	Gas	424.000,00	5,60
2	Kebersihan	324.400,00	4,28
3	Pendidikan	2.239.998,40	29,58
4	Komunikasi	382.800,00	5,06
5	Listrik	696.400,00	9,20
6	Bensin	2.640.000,00	34,86
7	Pakaian	864.800,00	11,42
	Total	7.572.398,40	100,00

Source : Primary Data Processed 2024

Table 6 shows that the largest proportion of non-food expenditure is to buy fuel at 34.86%, considering that the need for fuel in each farmer household is quite large, especially for transportation activities and other activities both in the village and outside the village. In addition, it is also a mode of transportation for farmer households to visit farmland. Meanwhile, communication spending with the lowest proportion, which is 5.06% for the purchase of credit or internet packages.

Exchange Rate of Income and Welfare of Farmers' Households

The farmer household exchange rate (NTPRP), is an important indicator to see the welfare of farmer households, NTRP is obtained from the total income of farmer households divided by all expenses incurred by farmers and their families. The following are the results of the NTPRP calculation.

Table 7. Farmer Household Income Exchange Rate in Sekotong District in 2024.

No.	**Description**	**Value**
1	Sources of Income	
	a. On Farm Income	12.373.885,83
	b. Off Farm Income	8.668.000,00
	c. Non-Farm Income	5.520.000,00
	d. Other Source Income	4.980.000,00
	Total Revenue	31.541.885,83
2	Production Type	
	a. Agricultural Production	4.056.114,17
	a. Food Production	23.071.800,00
	b. Non-food waste	7.572.398,40
	Total Disbursements	34.700.312,57
3	Purchasing Power of Farmer Households (DBRT)	1,03

4	Farmer Household Income Exchange Rate (NTPRP)	0,91

Source : Primary Data Processed 2024

According to the Central Statistics Agency (BPS) (2023), the NTPRP (Farm Household Income Exchange Rate) is a more appropriate indicator for measuring the welfare of farming households because it includes all household expenditures, including farming expenses. The NTPRP calculation results, as shown in the table above, are 0.91. This value, when compared to the DBRT value, is smaller. This indicates that although farming families are able to meet all their household needs, the welfare of farming households is still considered less prosperous because the NTPRP value is still below 1.

The NTPRP analysis also provides information that, to meet the welfare level of farming households in Sekotong District, they allocate more of their income to consumption than to farming. Furthermore, farmers believe that allocating larger costs to farming activities prevents them from increasing their income because farming is carried out on dry land, which is not considered optimal, unlike irrigated rice fields.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the research and discussion that has been described previously, it can be concluded that the average household income of dryland farmers in Sekotong District is Rp. 31,541,885.83 coming from several sources, with the largest contribution from the on-farm sector (39.23%). The average household expenditure of dryland farmers is Rp. 34,700,312.57 which is allocated for agriculture, food and non-food expenditure. Based on the calculation results, the NTPRP in Sekotong District shows that the NTPRP value is 0.91 which shows that the value is still below 1. The results of the analysis show that the level of welfare of dryland farmers is still relatively unprosperous.

The recommendations of this study emphasize the importance of income diversification, strengthening farmer institutions, price stabilization, as well as technological innovation and financing as strategic steps to improve the welfare of dryland farmers in Sekotong District.The implementation of a sustainable evidence-based policy is expected to be able to increase the value of NTPRP above one, so that farmers not only survive, but also develop towards sustainable welfare.

FURTHER STUDY

This research is still static descriptive that describes welfare conditions in a certain period of time. Further research needs to develop dynamic models using panel or time series econometric approaches to analyze how variables such as commodity prices, inflation, subsidy policies, and climate change affect *NTPRP* fluctuations over time. This kind of model will strengthen the ability to predict changes in farmers' welfare due to external factors and public policies. The welfare of dryland farmers is not only affected by economic factors, but also by ecological conditions such as water availability, land degradation, and climate change.

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