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| RESEARCH ARTICLE

Portrait of Household Income and Corn Farmers Welfare City and Village Area in Gorontalo District, Indonesia

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| ABSTRACT
The purpose of this research is to):1 examine the contribution of income from corn farming to household income of farmers in city and village areas and 2) photograph the welfare level of corn farmers in village and city areas. This research was conducted in Gorontalo Regency. The object studied is the welfare of corn farmers based on the Sajogyo criteria approach. The type of research data is primary data, with the data source being corn farmers; therefore, the method used is a survey. The sampling technique used purposive random sampling. The purposive technique (deliberately) was carried out for samples of city and village areas. The criteria for the regional sample are; distance, accessibility, the form of government administration, and facilities. The selected sample cities are Tenilo and Tilihuwa Villages, while the selected village areas are Modelidu Village and North Dulamayo Village. The number of sampling units is 87 farmers, with the distribution of each region using proportional allocation. The results showed that: 1) the contribution of income from corn farming to the total household income of corn farmers in city areas is 33.69%, and in village areas, it was 59.02%. Statistically, in village areas, the proportion of farmers whose sources of income from corn farming exceed other incomes is significant, while in city areas, the proportion is not significant; 2) if the household income of corn farmers only comes from corn farming, based on the Sajogyo indicator, the welfare level of corn farmers in city areas is included in the poor category, while corn farmers in village areas are in the near poor category.

| KEYWORDS

Corn Farmers, city and village areas, income, and welfare

| ARTICLE INFORMATION

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1. Introduction

The agricultural sector is still the mainstay of economic development in many regions of Indonesia, including Gorontalo Regency and Gorontalo Province. In 2021, according to BPS data, this sector contributed 40.38% of all sectors to GRDP according to business fields based on constant prices. One of the agricultural commodities that are the mainstay of the economy of Gorontalo Regency is corn. This commodity, in addition to contributing to total production in the Gorontalo Province, is also a source of livelihood for some farmers as well as the main source of income in the farmer's household economy.

Corn farming carried out by the people of Gorontalo Regency is not only carried out by farmers in village areas but also by farmers in city areas, namely areas close to the center of the district capital. Characteristics of different areas affect corn farming managers because of differences in farmer characteristics, land conditions, and regional accessibility. The characteristics of the city and village areas also have an impact on the use of time not working on the main farm for other productive activities. A study conducted by Baruwadi et al. (2019) found that corn farmers in Gorontalo Province used their time not working on corn farming for other productive activities, namely other farming outside corn and outside the agricultural sector.

Utilization of time not working farmers for productive activities will have a positive impact on increasing household income and farmers' welfare due to other sources of income besides corn farming. Therefore, it is necessary to conduct a study to reveal this. This study aims to: 1) examine the contribution of income from corn farming to household incomes of farmers in city and village areas; and 2) photograph the welfare level of corn farmers in city and village areas.

2. Research Methods

This research was conducted in Gorontalo Regency. The object studied is the welfare of corn farmers based on the Sajogyo criteria approach. This study uses primary data with data sources are corn farmers; therefore, the method used is a survey. The sampling technique used purposive random sampling. The purposive technique (deliberately) was carried out for samples of city and village areas. The criteria used for the regional sample are; corn producers, distance to the district capital, accessibility, form of government administration, and facilities. Based on these criteria, the sample of the selected city area is Tenilo Village and Tilihuwa Village, while the selected village area sample is Modelidu Village and North Dulamayo Village. Determining the sample unit of farmers is done randomly. The number of sample of farmers is 87 people, who are allocated proportionally in each sample area. The proportional allocation formula is as follows (Harun Al Rasyid, 1997):

$$ni = \frac{Ni}{N} \times n$$

where n_i = sample size in village/kelurahan i;

N_i = number of population members in the village/kelurahan area i;

N = number of area population members sample = 315 people

n = number of samples =87 people.

The data analysis of this research refers to the research objectives, namely:

1. The contribution of corn farming income to farmers' household income uses the following formula:

a) Farmer household income

$$PRtp = PUj + PLUj + PLP$$

where PRtp = Farmer household income
PUj = Income earned by corn farming
PLUj = Income earned from outside corn farming
PLP = Income earned from outside the agricultural sector

b) Corn Farming Income

$$\pi = TR - TC$$

where: π = Income from corn farming
TR = Total revenue*(total revenue)*corn farming
TC = Total costs incurred*(total cost)*corn farming

Revenue from corn farming is the result of multiplying corn production with the selling price of its production, using the formula.

$$TR = Pj \times Qj$$

where : Pj = Corn price
Qj = Total corn production

c) Contribution of corn farming income to farmer's household income

$$K = \frac{PUj}{PRtp} \times 100\ \%$$

where : K = Contribution
Puj = Corn farming income
PRtp = Corn farmer household income

To measure the significance of the contribution of income sourced from corn farming on farmers' household incomes, the Z Proportion Statistics Test is used with the following formula

$$Z = \frac{x/n - \pi_o}{\sqrt{\pi_o (1 - \pi_o)/n}}$$

where Z = test statistic
x = number of farmers who have farm income more corn higher than other sources of income
π_o = population limit proportion = 0.50
n = number of farmer samples

Criteria:
Accept H0 : $Z_{count} < Z_{0.05}$
Reject Ho: $Z_{count} > Z_{0.05}$

2. Welfare of corn farmers
The welfare of corn farmers was analyzed using the poverty line criteria by Sajogyo in Setiyawati et al. (2017), as presented in the table below.

Table 1
Welfare Measures Based on the Sajogyo Poverty Line Criteria

No	Description	Information on Welfare Level/Capita/Year
1.	The Poorest Household	< 180 kg rice equivalent
2.	Very Poor Household	181 – 240 kg rice equivalent
3.	Poor Household	241 – 320 kg rice equivalent
4.	Almost Poor Household	321 – 480 kg rice equivalent
5.	Enough Household	481 – 960 kg rice equivalent
6.	Decent Living Household	> 960 kg rice equivalent

Source: Sajogyo in Setiyawati, et al (2017)

3. Research Results and Discussion

3.1 Characteristics of Corn Farmers

The characteristics of corn farmers describe the identity of corn farmers who are respondents to this study. These characteristics include the area of land ownership, age, experience in corn farming, productive labor in the family, the burden of substitutability, and formal education followed by the respondents. Table 2 presents the identity of corn farmer respondents

Table 2
Identity of Corn Farmers Respondents in City and Village Areas in Gorontalo Regency

No	Characteristics of Respondents	Unit	City Area			Village Area		
			Tenilo	Tilihuwa	Average	Modelidu	Dulamayo North	Average
1	Sample	person	11	24	35	28	24	52
2	Land area							
	Average	*hectares*	0.73	1.25	1.09	1.90	1.20	1.50
	Standard deviation		0.40	0.79	0.73	1.93	0.66	1.21
3	Age							
	Average	year	35.27	45.38	42,20	41.60	44.60	41.90
	Standard deviation		9.84	9.85	10.81	13.44	10.59	12,20
4	Experience							
	Average	year	11.09	15.38	14.03	15,70	13.40	14.55
	Standard deviation		7.20	7.06	7.29	8.42	7.60	7.86
5	*Productive workforce*							
	Average	person	1.82	2.29	2.14	2.70	2.40	2.55

	Standard deviation		0.60	0.69	0.69	1.12	0.72	0.92
6	*Dependent burden*							
	Average	person	3.45	4.08	3.89	4.20	3.90	4.05
	Standard deviation		0.82	1.14	1.08	1.34	1.12	1.23
7	*Formal education*							
	Did not pass elementary school	%	0.00	29.20	20.00	32.10	25.00	28.55
	Elementary School	%	45,50	54.20	51.40	42.90	50.00	46.45
	Junior High School	%	18,20	8.30	11.40	14.30	16.70	15.50
	High School	%	27.30	8.30	14.30	10.70	8.30	9.50
	College	%	9.10	0.00	2.90	0.00	0.00	0.00

Source: Data processed, 2022

The average area of land cultivated by corn farmers in city areas is 1.09 ha (sd = 0.73). This figure is smaller than the cultivated area for maize in the village area, which is 1.50 ha (up to = 1.21). The narrowness of arable land in the city compared to the village is due to the area having good accessibility, encouraging the conversion of agricultural land to other needs.

From the aspect of age, the average age of corn farmers in city areas is 42.20 years (sd = 10.89) or higher than the average age of farmers in village areas, namely, the average age is 40.12 years (sd = 10, 89). However, this age difference is not significant because it is in the productive age range.

For indicators of experience in corn farming, farmers in city areas have an average experience of 14.03 years (sd = 7.29). This situation is not too different from the experience of corn farmers in village areas, where the average experience in corn farming is 14.55 years. If it is adjusted to the average age of corn farmers, the average early corn farmers cultivate their own corn fields when they are 25 -27 years old.

In terms of a productive workforce, corn farmer households in city areas have an average of 2.14 productive workers (sd = 0.69). This situation is lower than the productive workforce owned by farmer households in village areas, which has a productive workforce of 2.55 people per farmer household (sd = 0.92). This figure shows that in the utilization of family greeting workers for corn farming, corn farmers in village areas will be higher than in city areas.

For the burden of family dependents, corn farmers in city areas have an average of 3.89 people (sd = 1.08). This figure is smaller than the dependent burden of corn farmer families in village areas which reached 4.05 people (sd = 1.23). If it is related to the number of workers owned by maize farming households in village areas which are higher than in city areas, it can be concluded that this dependent burden contributes to the existence of productive workers in maize farming households in village areas.

The situation of corn farmers is based on their formal education; the education of corn farmers in city areas is higher than that of farmers in village areas. The education of farmers who did not pass elementary school in city areas reached 20.0%, while in village areas, it reached 28.55%. For the education level of corn farmers who graduated from high school and university, there were 17.2% in city areas and 9.50% in village areas. The existence of a level of education for farmers will also influence the management of corn farming as well as the opportunity to diversify businesses to increase farmers' household income.

3.2 Corn Farmer Household Income

Corn farmer household income is the total income generated by farmers from various sources of productive activities carried out. Based on the results of the study, the household income of corn farmers in the city and village areas that became the observation area came from; corn farming which became the main farmer's farm, non-maize farming, and business outside the agricultural sector. Income derived from farming outside of corn comes from horticulture, tubers, plantations, and livestock. Farmers' incomes obtained from businesses outside the agricultural sector are; food stalls for daily needs, transportation services, farm laborers, construction workers, and construction workers. Table 3 presents the household income of maize farmers in city and village areas by source.

The average income of farmers from corn farming in city areas is 7.293 million per season. This figure is lower than the average income received by corn farmers in village areas, where the income is 11.493 million per season. For incomes sourced from other farms apart from corn, the average income of farmers in city areas per season is 8.037 million, while village areas have lower incomes of 4.227 million per season. This shows that farmers in city areas have diversified their farming outside of corn farming and causing low income from corn farming. The low income obtained from corn farming in city areas is influenced by the

increasingly narrow area of arable land due to the conversion of land functions for various uses. The average area of land cultivated by corn farmers in city areas is 1.09 ha, while in village areas, the average area of land cultivated by corn farmers is 1.48 ha.

Table 3. Household Income of Corn Farmers in City and Village Areas by Source

No	Region		Corn Farmer Household Income (thousands of rupiah)			
	Category	City/Village	Corn Farming	Farming Outside Corn	Outside the Agricultural Sector	Amount
1	City	Tenilo	5,291	10,744	4.291	20,326
		Tilihuwa	8,211	6.797	7.244	22,252
City Average			*7.293*	*8037*	*6.316*	*21,647*
2	Village	Modelidu	14,244	4.653	5.033	23,930
		North Dulamayo	8,742	3,801	2,471	15,014
Village Average			*11.493*	*4.227*	*3,752*	*19,472*

Source: Processed data (2022)

For corn farmers' household income sources outside the agricultural sector, farmers in city areas earn an average of 6.316 million per growing season. This amount is almost the same as corn farmers in village areas, who earn 3.752 million per growing season. Overall, maize farmers' household incomes from various sources indicate that farmers in city areas have higher incomes than farmers in village areas. The average total income of farmers in city areas is 21.65 million per growing season, while farmers in village areas earn 19.472 million per growing season. This household income has not been reduced by household expenses.

Based on this total household income, the per capita income of corn farmers per season can be calculated by dividing the total income by the average number of dependents and farmers. Based on the characteristics of the respondents in Table 1, the average dependent burden of corn farmers in the city area is 3.89; after adding the farmer as the head of the family, the average number of all members of the farmer's household is 4.89 people. Of this amount, the average income per capita of corn farmer households in city areas in one growing season is 4.43 million per capita. For village areas with an average number of dependents of 4.01 or a total number of household members of 5.01, the income per capita in one growing season is 3.90 million, or lower than corn farmers in city areas.

To get a simpler generalization of the portrait of household income of corn farmers in city and village areas, it is presented in percentage form as presented in Table 4. This table shows that for farmers in city areas, household income sourced from corn farming only contributes 33.69% of their total household income, while in village areas, corn farming is still dominant, contributing 59.02% of total household income. the stairs. This shows that in an effort to meet their daily needs, farmers in village areas are more focused on corn farming compared to farmers in city areas.

The difference in household income between farmers in city and village areas will be clearer if analyzed from the income sources of farmers originating from farming outside of corn and income from outside the agricultural sector. For sources of income originating from farming outside of corn, it contributes 37.13% to farmers in city areas, while in village areas, the contribution is only 21.71%; meanwhile, for sources of income originating from outside the agricultural sector, farmers in the city areas earn 29%. .18%, while farmers in village areas get 19.27%. Based on this data, information can be obtained that corn farmers in village areas are still highly dependent on corn farming for their household income compared to corn farmers in city areas.

Table 4. Portrait of Corn Farmer Household Income in City and Village Areas

No	Region		Farmer Household Income (%))			
	Category	City/Village	Corn Farming	Farming Outside Corn	Outside the Agricultural Sector	Amount
1	City	Tenilo	26.03	52.86	21.11	100.00
		Tilihuwa	36.90	30.55	32.55	100.00
City Average			33.69	37.13	29.18	100.00
2	Village	Modelidu	59.52	19.44	21.04	100.00
		North Dulamayo	58.23	25.32	16.46	100.00
Village Average			59.02	21.71	19.27	100.00

Source: Data processed, 2022

To illustrate the significance of the contribution of income obtained from corn farming on farmers' household income, a statistical analysis of the proportion test was carried out, in which the results of the analysis are presented in Table 5.

Table 5. Results of Statistical Test of the Proportion of Corn Farming Income Contribution to Home Income Farmer's Ladder

No	Region		Total Farmer Sample	Dominant Contribution		Average Income		Z_{count}	$Z_{0.05}$
	Category	City/ Village		Corn	Non Corn	Corn (000)	Corn outside (000)		
1	City	Tenilo	11	1	10	5,291	15,035	- 3,072	- 1,645
		Tilihuwa	24	9	15	8,211	14,041	- 1,224	- 1,645
City Average			35	10	25	6.751	14,538	-2.543	- 1,645
2	Village	Modelidu	28	15	13	14,243	15,614	1,889*	1,645
		North Dulamayo	24	17	7	8,741	6.271	2,042*	1,645
Village Average			52	32	20	11.492	10,943	2,787*	1,645

Source: Processed data (2022)

*)Significant α = 0.05

The results of statistical tests, as can be seen in the last two columns of the table above, show that in the village area, a significant proportion of farmers have sources of income from corn farming that exceed the income earned from outside corn; this is based on a comparison of the value of Zcount > Zlist. For city areas, the comparison value shows Zcount < -Z List, which means that the proportion of farmers whose income from corn farming is higher than non-maize income is not significant. The Zcount value obtained is even negative; this shows that the proportion of farmers whose income from corn farming is higher than non-maize income is smaller.

3.3 Corn Farmer Welfare

To compare the welfare level of corn farmers in city and village areas, a measure of the degree of the welfare of farmers' households is used. The measurement of the degree of the welfare of the farmer's household used the poverty line, as stated by Sajogyo in Setiyawati et al. (2017).

To measure the welfare level of corn farmers in this study, the following assumptions are used: 1) the price of rice is Rp. 10,000/kg; 2) farmers' income for one growing season is converted into 1 year's income; 3) income outside the agricultural sector is converted into 12 months, and 4) in 1 year, there are 2 planting seasons. The welfare level of corn farmers were analyzed based on sources of income, namely: income from corn farming alone, corn farming income plus income from other farms, and total farmer household income after income from corn farming and from outside corn farming plus income from outside the agricultural sector.

The results of calculating the welfare level of corn farmers in city and village areas based on the Sajogyo poverty limit approach are presented in Table 6.

Table 6
Household Welfare of Corn Farmers in City and Village Areas by Source Income

No	Region		Corn Farmer Household Income (equivalent to rice/capita/year)		
	Category	City/Village	Corn Farming Only	Whole Farm	Total
1	City	Tenilo	216,40	655.83	866.43
		Tilihuwa	335.83	613.82	969.36
City Average			298.28	626.99	936.98
2	Village	Modelidu	568.62	754.37	1279.45
		North Dulamayo	348,98	500.72	619.09
Village Average			456.89	593.97	822.62

Source: Data processed, 2022

The table above shows that if household income comes only from corn farming, the average level of welfare of maize in city areas is in the category of poor households because the income for a year is 298.28 kg, equivalent to rice per capita per year. For village areas in the same condition, their welfare is in the category of near-poor households because the income they get is 456.89 kg of rice equivalent per capita per year. Indications of the findings of this study indicate that if the household income of corn farmers only comes from corn farming, the welfare of corn farmers in village areas is higher than corn farmers in city areas. This is due to the fact that farmers in village areas, on average, have a higher corn area than farmers in cities.

For the situation when farmers' household income from corn farming alone is added to income from other farms besides corn, corn farmers in city areas get a household income of 626.99 kg, equivalent to rice per capita per year. This figure is in the category of moderate household welfare level. In the same condition, the household income of farmers in the village area, after the income obtained from corn farming is added to the income obtained from farming outside of corn, the household income becomes 593.97 kg of rice equivalent per capita per year. The findings of this study indicate that with other sources of income from farming other than corn, the level of welfare of farmers in city and village areas is both in the category of moderate households; in other words, the income obtained from farming outside of corn has been able to improve the welfare of corn farmers in both city and village areas. However, the greatest influence is on corn farmers in city areas, where previously, the level of welfare was in the category of poor households when household income only came from corn farming, increasing two levels to moderate households. For village areas, the increase in farmer household income from non-maize farming only increases the level from near-poor households to moderate households. These findings indicate that maize farmers in city and village areas will tend to improve their welfare by carrying out other productive activities on other farms other than maize.

In the condition of the total income of farmers' households where income outside the agricultural sector has been included in the income obtained from corn farming and non-maize farming, the income for corn farmers in city areas is 936.98 kg, equivalent to rice per capita per year. If converted to the category of welfare level, this income is in the category of the sufficient household. For village areas, income sourced from outside the agricultural sector and added to income obtained from corn farming and from farming outside corn has increased income by 822.62 kg of rice equivalent per capita per year, which, based on the welfare criteria, this income is in the house category enough stairs.

4. Conclusion

Based on the results of the study concluded as follows:

1) The contribution of income obtained from corn farming to the total household income of corn farmers in city areas is 33.69%, and in village areas, 59.02%. Statistically, in village areas, the proportion of farmers whose sources of income from corn farming exceed other incomes is significant, while in city areas, the proportion is not significant.
2) If the household income of corn farmers only comes from corn farming, based on the Sajogyo indicator, the welfare level of corn farmers in city areas is included in the poor category, while corn farmers in village areas are in the near poor category. The existence of sources of income originating from other farms outside of corn and outside the agricultural sector has an impact on improving the welfare of farmers, each of which is in the category of sufficient households.

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