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ANALYZING THE COST OF PADDY RICE LABOR IN INDONESIA: A CASE STUDY IN TEN TONS SYNGENTA PROJECT

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ABSTRACT

Rice is a commodity strategy and a basic food for nearly all Indonesian households. The purpose of this study is to describe the labor utilization and costs associated with all farming activities, as well as the income and efficiency of lowland rice farming. The study took place in the Ten Tons Syngenta area, specifically in Glanggang Village, Beji District, Pasuruan Regency, East Java. The study took place between August and September 2022. The sample was determined using a 20% random sampling technique, which in the collection of 22 samples of farmers. The research data were derived from primary sources and were gathered through direct interviews with farmers. The results indicated that labor costs is so high in land preparation and planting (53.50 percent) dominated work in lowland rice farming, followed by harvesting (17.37 percent), weeding (14.74 percent), fertilizing (8.92 percent), and spraying (5.4 percent). Lowland rice farmers earn Rp. 5,381,567 per hectare and have an R/C ratio of 1.35. The application of advanced technology, particularly in land preparation and planting, is critical for increasing the income and efficiency of lowland rice farming in the Syngenta ten-ton area in order to support rice self-sufficiency in the run-up to Indonesia's 100th anniversary of independence in 2045.

***Key words**: labor costs, lowland rice, ten tons Syngenta*

ABSTRAK

Beras merupakan komoditas strategis dan makanan pokok bagi hampir seluruh rumah tangga Indonesia. Tujuan dari penelitian ini adalah untuk mendeskripsikan penggunaan tenaga kerja dan biaya pada semua kegiatan usahatani, serta pendapatan dan efisiensi usahatani padi sawah. Penelitian dilakukan di kawasan "Ten Tons Syngenta", tepatnya di Desa Glanggang, Kecamatan Beji, Kabupaten Pasuruan, Jawa Timur. Penelitian pada bulan Agustus sampai dengan September 2022. Sampel penelitian ditentukan dengan menggunakan random sampling sebanyak 22 petani. Data penelitian adalah data primer dikumpulkan melalui wawancara langsung dengan petani sampel. Hasil penelitian menunjukkan bahwa tenaga kerja usahatani padi sawah didominasi oleh pekerjaan penyiapan lahan dan penanaman (53,50 persen), diikuti oleh pemanenan (17,37 persen), penyiangan (14,74 persen), pemupukan (8,92 persen), dan penyemprotan (5,4 persen). Petani padi sawah berpenghasilan Rp. 5.381.567 per hektar dengan R/C ratio sebesar 1,35. Penerapan teknologi modern bidang mekanisasi pertanian, khususnya dalam penyiapan lahan dan penanaman, sangat penting untuk mengurangi biaya sehingga meningkatkan pendapatan dan meningkatkan efisiensi usahatani padi sawah di Kawasan Ten Tons Syngenta, guna mendukung swasembada beras menjelang peringatan 100 tahun Indonesia Merdeka tahun 2045.

Kata kunci: biaya tenaga kerja, padi sawah, program Ten Tons Syngenta

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INTRODUCTION

Rice is a strategic commodity and staple food for almost all households in Indonesia (Sa'diyah *et al.*, 2019; McCulloch and Timmer, 2008). Based on data from the Central Bureau of Statistics (2021) Rice production in 2021 is estimated at 55.16 million tons of milled dry grain (Local term: Gabah Kering Giling or GKG), an increase of 556.51 thousand tons or 1.02 percent compared to production in 2019 of 54.60 million tons of GKG. The rice harvested area in 2021 is estimated at 10.79 million hectares, an increase of 108.93 thousand hectares or 1.02 percent compared to the harvested area in 2019 which was 10.68 million hectares. If the potential for rice production in 2021 is converted into rice for the population's food consumption, rice production in 2021 is estimated at 31.63 million tons, an increase of 314.10 thousand tons or 1.00 percent compared to 2019 which was 31.31 million tons.The largest rice production is contributed by the island of Java, especially the provinces which are production centers such as East Java, Central Java, and West Java. Based on data from the 2016 National Household Socio-Economic Survey (SUSENAS), information was obtained that the share of grain expenditure was the largest among all household expenditures, reaching 20%. Rice is a strategic commodity and staple food consumed by almost all Indonesian people (Sa'diyah et al., 2019). This is shown by the 2016 National Socio-Economic Survey data, that the share of grain expenditure at various income quintile levels, from the lowest income household (Q1) to the richest household (Q5) is 50.2%, 43.7%, 40.2% , 34.8%, and 26.2% (Nikmatul et al., 2020).

Beji District is one of the sub-districts in Pasuruan Regency which produces rice commodity. This sub-district consists of 2 sub-districts and 12 villages. The area of paddy fields in Beji sub-district is around 2370.5 ha with an average rice productivity of 7.2 tons/ha. It has a large enough production and land area and is one of the rice centers in Pasuruan Regency with a total production of 936 Kwintal per Hectar in 2021. One of the villages in Beji District that produces rice is Glanggang Village, which has an agricultural land area of 97.02 ha. And the majority of the population works as farmers, especially rice farmers, which are superior agricultural products in Glanggang Village. Meanwhile, the increase in production or crop productivity does not necessarily cause farmer households to achieve the word prosperous to increase their needs. Socio-economic factors such as age, level of education of farmers, duration of farming, number of dependents, area of farming, labor and capital among each farmer are different. The success of a farm is influenced by production factors (labor, land, capital, technology) (Key and Runsten, 1999; Simmons, Winters and Patrick, 2005; Udimal *et al.*, 2017). Labor is an important element in farming. Capital is needed for the procurement of production facilities (seeds, fertilizers, pesticides and equipment), labor costs, plant maintenance costs, marketing and transportation (Lewontin and Berlan, 1986; Openshaw, 2000; Quddus and Kropp, 2020). Socio-economic factors such as age, level of education of farmers, duration of farming, number of dependents, area of farming, labor and capital among each farmer are different. This is related to farmers' efforts to increase their total income as an effort to improve the welfare of farmers and their families through production levels.

Syngenta, a leading agricultural company, has initiated various programs aimed at enhancing rice farming productivity and knowledge transfer among farmers in Indonesia. The "10 Ton Club Program," established in East Java since 2011, encourages successful rice farmers to share their expertise with others, promoting increased yields and incomes through modern technology and best agricultural practices. By utilizing the program's

GROMORE™ technology and guidance from agricultural experts, farmers have increased their yields from 5-6 tons/ha to 10 tons/ha. The "10 Ton Rice Production Area" initiative further supports rice productivity through the use of Syngenta products, categorized into development zones (KTD) and superior areas (KTS). The Syngenta Learning Center, initiated in 2013, acts as a platform for training and sharing knowledge among farmers, promoting sustainable agriculture practices and effective utilization of agricultural technology. Stewardship training, reaching an average of 100,000 farmers annually, emphasizes responsible crop protection material management to optimize benefits while minimizing risks to humans, plants, and the environment. These initiatives collectively strive to enhance Indonesia's food security while fostering relationships and trust among various stakeholders in the agricultural sector.

Research relating to labor costs, rice farming income, and rice farming efficiency has been carried out in various countries, including Malaysia (Najim et al., 2007), Philippines (Koirala, Mishra and Mohanty, 2016) ,Vietnamese (Dang,2017) and Kenya(Yamane, no date). However, in Indonesia, only a handful of studies have been done, see Rifki, Khoiriyah and Sudjoni (2021), Kurniati, Sukiyono, and Purmini (2020); Bakri et al. (2021). Therefore, this study is important not only due to its contribution to the broader field of rice farming research but also because it addresses a significant gap in the Indonesian context. This study aims to fill this research gap by providing nuanced insights into the unique context of the Syngenta ten-ton area in East Java, Indonesia. Through its findings, this study intends to contribute valuable knowledge that can inform strategies to optimize labor utilization, increase income, and enhance the overall efficiency of rice farming practices in Indonesia.

METHODS

The Location, Sampling technique, and the Research Data

The research was conducted in Glanggang village, Beji district, Pasuruan regency. Determination of villages and sub-districts intentionally, with the consideration that the village is a production center for Syngenta's ten tons of paddy. The population in this study were all rice farmers participating in the Syngenta ten ton program. The research was carried out for two months, starting from August 2022 to September 2022. Simple random sampling was used to determine the number of samples (Devi, 2020; Derraz *et al.*, 2023; Nathanel *et al.*, 2023). The Slovin method was used to determine the sample size,samples were obtained using the following formula (Fitri and Nainggolan, 2022; Juni, Efrianti and Fifian, 2022; Jati and Soebagyo, 2023):

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

n = Number of respondents,
N = Total population,
e = margin of error (20%)
1= Constant Number
Based on this formula, the sample size in the study can be determined as follows:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{150}{1+150(0.20)^2}$$

$$n=\frac{150}{1+150(0.04)}$$

n = 21.428

n = 22 people

The data used in this study is primary data, collected through direct interviews with farmers using a questionnaire that has been prepared previously. The data collected is rice farming data covering all costs of all production inputs including labor costs for all activities, namely soil processing, planting, replanting, weeding, fertilizing, spraying, and harvesting. Besides that, socio-economic data of farmers were also collected including data on age, education level, number of family, land area, and farming experience. Data analysis using analysis of farmer income, and R/C ratio.

Data analysis: farm income analysis and R/C ratio

Farming income is obtained from the difference between costs and revenues. Farming costs are the sum of all fixed costs and variable costs (Talakua, Kakisina and Timisela, 2022). The total cost of ten tons of Syngenta rice farming can be calculated using the following formula (Dewi *et al.*, 2022; Sinambela and Djaelani, 2022):

$$TC = FC+VC \quad (2)$$

TC = Total Cost (Rp), FC = Total Fixed Cost (Rp), and VC = Total Variable Cost (Rp). Whereas acceptance is multiplication between rice production and rice prices. Syngenta tens ton rice farming revenue can be calculated using the following formula (Elmulthum *et al.*, 2023; Abdoul and Bozoğlu, 2023):

$$TR = PQ \quad (3)$$

TR = Total Revenue (Rp), P = Price (Rp/Kg), and Q = Total Production (Kg).

Farmers' income is calculated as the sum of their income and expenses during the production process. Many factors can affect the amount of income earned by farmers, including the size of the business, the availability of capital, the level of product prices, the availability of labor, transportation facilities, and the marketing system. Syngenta's ten tons of rice farming income is calculated using the following formula (Rahim *et al.*, 2022; Watson and Winfree, 2022):

$$\pi = TR-TC \quad (4)$$

π = Profit (Rp), TR = Total Revenue (Rp), and TC = Total Cost (Rp)

To see whether Syngenta's ten tons of rice farming is efficient or not, R/C ratio analysis is used. The analysis of the R/C ratio is to compare the total cost with the total revenue. The formula for the R/C ratio can be written as follows (Eliyatiningsih and Mayasari, 2019; Nadhirah, Napitupulu and Saadilah, 2023; Turukay, SP and Luhukay, 2023):

$$\text{R/C Ratio} = \frac{\text{Total revenue}}{\text{Total Cost}} \quad (5)$$

Under the condition:

- If R/C<1, then rice farming in the Syngenta area is inefficient.
- If R/C>1, then rice farming in the Syngenta area is efficient.
- If R/C=1, then rice farming in the Syngenta area is at the break-even point.

RESULTS AND DISCUSSION

Description of farmers based on socio-economic characteristic

The characteristics of respondent farmers in this study are described in general terms, namely the socio-economic conditions of farmers seen from the classification of age, gender, land area, number of household members, education, occupation, land area

and length of farming experience (Egbeadumah *et al.*, 2023; Gniza and Loa, 2023; Rajashekhar, Jagadeeswary and Shree, 2023). The characteristics of lowland rice farmers in ten tons Syngenta region can be seen in Table 1.

Table 1 describes the socio-economic conditions of farmers in the study area. Lowland rice farmers in the Syngenta ten tons area are dominated by the age of 51-60 years (34.88%), This shows that Syngenta's ten tons of lowland rice farmers have an age group of farmers who are still young or classified as productive working age. Thus, lowland rice farmers have enormous potential to increase production and develop their farms. In the gender variable, information was obtained that respondent farmers were dominated by men, namely 81.81%, the rest were women, namely 18.19%. It can be explained that the affairs of workload, labor, work power are carried out by men compared to women. Or in other words, men dominate work in the farming sector, especially rice. This happens in most farmers in Java and even in Indonesia that rice farming is carried out by men, only a small percentage of rice farming is carried out by women This is in line with research (Mulyaningsih, Suherna and Gunawan, 2021) in Banten, Indonesia and research in various countries (Lusiba, Kibwika and Kyazze, 2017) in Uganda (Najim et al., 2007) in Malaysia and (Thapa et al., 2020) in Nepal, also other countries (Egbeadumah *et al.*, 2023; Gniza and Loa, 2023; Rajashekhar, Jagadeeswary and Shree, 2023).

Table 1. Description of the farmers based on socio-economic characteristic

Variable	Amount (person)	Percentage (%)
Age (years)		
31-40	9	20.93
41-50	14	32.56
51-60	15	34.88
61-80	5	11.63
Gender		
Male	18	81.81
Female	4	18.19
Household Members (person)		
1-2	4	18.19
3-4	17	77.27
>=5	1	4.54
Education		
Primary school	9	40.91
Junior high school	3	13.63
Senior High School	8	36.37
Undergraduate	2	9.09
Occupation		
Farmer	19	86.36
Breeder	1	4.55
Housewife	2	9.09
Land Area (hectare)		
0.10–0.20	11	50
0.21–0.40	9	40.90
>0.40	2	9.1
Farming Experience (years)		
1-20	7	31.81
21-40	15	68.19

Source: Author's computation, 2022.

In the variable number of household members, the results showed that most of the respondent farmers had 3-4 household members (77.27%), followed by 1-2 people (18.19%) and same and more than 5 people (4.54%). The number of family dependents is one aspect that shows how much burden a family head must bear and has an impact on the welfare of the farming family. In the education variable, the respondent's farmer education is dominated by elementary school graduates, which is 40.91%, followed by high school graduates 36.37% and junior high schools, which are 13.56%, the rest are S1 graduates at 9.09%. The results of this data analysis show that the education of respondent farmers is low, and only 9.09% of respondent farmers have completed formal education up to S1. Judging from the type of work, most of the respondent farmers are farmers (86.36%), followed by housewives (9.09%), and breeders (4.55%). The higher the level of education of a person, the mindset of a person also develops, so that it is easy to make decisions in carrying out an action, including in farming activities. Farmers who are highly educated will find it easier to absorb or translate and find useful sources of information for the benefit of developing their farming.

Generally, the level of education affects the ways and patterns of thinking of farmers because education is a process of developing knowledge, skills and attitudes of farmers which is carried out in a planned manner, to obtain changes in improving the standard of living. and farmers (4.55%). The higher the level of education of a person, the mindset of a person will also develop, so that it is easy to make decisions in carrying out an action, including in farming activities. Farmers who are highly educated will find it easier to absorb or translate and find useful sources of information for the benefit of developing their farming.

The total area of land owned by 22 respondents of lowland rice farmers is 7.4 ha. Farmers who have a land area of 0.10-0.20 Ha as many as 11 people with a percentage of 50%, a land area of 0.21-0.40 Ha as many as 9 people (40.90%) and a land area of > 40 Ha as many as 2 people (9.1%). On average, each farmer owns an area of 0.33 ha. This shows that the respondent farmers belong to the category of small-scale farmers with a farm area of <0.5 ha. The area of land affects farmers in the acceptance and application of technology as an effort to increase production yields and affect the amount of production cultivated and the welfare that will be obtained. Farming experience can affect the knowledge of farmers in the cultivation techniques of farming activities that are carried out. Farmers who are more experienced in rice farming are generally better able to increase productivity than farmers who are less experienced. The farming experience variable shows that the majority of farmers (68.19%) have farming experience of around 21 to 40 years. The average experience of farmers in farming is 26 years. This farming experience shows that respondents have a lot of experience in managing their businesses and are more careful in making decisions in developing their farms.

Labor Cost

Labor is the most important part of the factors of production in an effort to maximize productive efforts both qualitatively and quantitatively. Labor is one of the important inputs in rice farming management. The use of labor in rice farming activities includes soil processing, planting, fertilizing, weeding, controlling HPT and harvesting (Yasa, 2017). According to Ali (2016), the types of agricultural labor include:

i. Human Labor: Human labor was the first labor before livestock was used to help farmers cultivate land or transport agricultural products. As long as jobs in agriculture can be done by human labor, farmers will not use livestock power or

machine power. In general, farmers with small lands always use human resources from their families, while rich farmers use agricultural labor more.

ii. Livestock: Livestock power is used by farmers in cultivating land, among others, to transport agricultural products, if the jobs in the agricultural business are too heavy or too long when using human power. Livestock commonly used for processing are cows and buffalo. The function of livestock in agriculture and farmer's life apart from being a source of labor is as a producer of organic fertilizer, savings for recreation and as a source of income for farming families.

iii. Machin Power: Mechanical power in agriculture is the same as livestock power, which has limited use. The engine power is used to drive the earthmoving machinery, transporting produce far away, and cultivating the land in areas close to big cities because farm laborers are becoming scarce. The labor costs in the Syngenta ten tons rice paddy area can be seen in Table 2.

Table 2. Labor costs in the ten tons of paddy rice area of Syngenta, Pasuruan

No	Activity	Wages (Rp/day)	Total (Rp)	Percentage (%)
1	Land preparation and planting	55,000	1,904,545	53.50
2	Fertilization	55,000	317,777	8.92
3	Spraying	55,000	195,000	14.74
4	Weeding	55,000	525,000	5.47
5	Harvesting	55,000	618,182	17.37
	Total		3,560,505	100

Source: Author's computation, 2022.

Table 2 shows that the total labor cost is Rp. 3,560,505,. The biggest cost is land preparation and planting of Rp. 1,904,545,- because land processing and planting requires a lot of labor. The smallest cost is the spraying of Rp. 195.000,-, because this activity does not require many workers. Local rice cultivation technology includes nursery, transplanting, land preparation, fertilization, maintenance, and pest control (Khairullah, 2020). Land preparation is carried out in two stages, the first stage is tillage by hoeing. The main activity is the construction of rice fields. The activity of making embankments is not only intended to mark the boundaries of rice field ownership but is also useful for holding and maintaining the presence of irrigation water in rice fields. The second stage of tillage is plowing and harrowing, plowing activities aim to loosen the soil that has been used for previous farming. The harrowing activity aims to tidy up the plowed rice fields so that they are easier to plant. The farming system in the research area, in terms of the use of existing technology from year to year, has developed, especially from the use of agricultural tools and machinery (alsintan) which has become a program of empowerment from the government to achieve maximum production. Some of the machineries used in lowland rice farming are Hand Tractor as a plowing tool for paddy fields. The existence of this alsintan can save work time, energy, and labor costs.

Respondent farmers for lowland rice at ten tons of Syngenta carry out planting by paying attention to the stages of planting and setting the spacing in order to get maximum results. Rice planting is carried out by farmers using a spacing tool called rangkek, this tool is made of bamboo which is made by the farmers using a 4:1 row 'legowo' system with a spacing between rows of 20 cm and a distance in rows of 15 cm. Planting by farmers takes 1-2 days. The first day of removing the seeds and setting the spacing. The second day is the activity of planting seeds in the grooves that have been arranged.

Planting requires quite a lot of labor because rice cultivation cannot be done in installments but must be done simultaneously.

The first seed embroidery is done by farmers when the paddy fields are seven (7) days old after planting because dead and growing rice is clearly visible on the color of the rice leaves. Ssdangkan fertilization according to the needs of the plant. Third, weeding and controlling plant pests and diseases. Weeding is done by cleaning plants from nuisance plants that can inhibit the growth of lowland rice, while controlling pests and plant diseases using chemicals, namely the use of pesticides, insecticides, fungicides, rhodenticides, and herbicides by spraying with a sprayer. Farmers in Glanggang Village are spraying using plenum brand pesticides to eradicate the pest walang sangit. The four irrigation arrangements, After the seeds are planted or the first fertilization for three days, the rice fields are not irrigated but are left in a state that is not too stagnant. At the age of 15-30 days the water is reduced to a height of 3-5 cm, at the age of 30-35 days the water is removed from the paddy fields for second fertilization. At the age of 56-65 days after planting, watering is carried out again and at 7-10 days before harvesting the rice fields are dried to accelerate fruit ripening.

Harvesting is the stage of taking the results of planting rice fields. The age of rice that is ready to harvest is 120 days after planting. Harvesting activities carried out by the sample farmers were in a simple way, namely by using a sickle to cut rice stalks. Harvesting activities carried out by the sample farmers took an average of 1 day with a workforce of 6 people to slash and collect the scythes. Harvesting (17.37%) is the second largest activity for labor costs after land processing and planting. With an average cost of Rp. 618,182 MT/ha. In MT (local term is musim tanam) is season plant of paddy rice in Syngenta.

Rice Farming Income and Efficiency

The total cost is the total expenditure used by farmers in their farming. Based on research data on respondent farmers, it is known that the average total cost of rice farming in the research area is Rp. 23,224,856.04 which consists of fixed costs and variable costs. In the results of research conducted by (Lumintang, 2013) with the title "Income Analysis of Rice Farmers in Teep Village, Langowan Timur District" which in this study obtained a total cost of Rp. 11,250,000/ha/MT. From the results of this study, the total costs incurred in farming in the area are lower when compared to the total costs incurred in rice farming in the Ten tons Syngenta area, Pasuruan. From the above comparison, the costs incurred in rice farming in Glanggang Village have not been efficient. For more details can be seen in Table 3.

Table 3. Average farm income, costs, total costs, and income

No	Description	Value (Rp)
1	Fixed cost	10,289,568.41
2	Variable Cost	5,026.136
	Total Cost	15,315,704.78

Source: Author's computation, 2022.

The following is a description of the explanation of fixed costs and variable costs. For more details can be seen in Table 4.

Fixed cost

Fixed costs are costs that do not change in value even though the output achieved changes. And what is included in the fixed costs in this study are the depreciation costs of tools such as hoes and sprayers used as well as land tax costs, and land rental costs.

Table 4. Fixed Cost of Rice Farming Per Hectare

No	Information	Total (Rp)	Percentage (%)
1	Tax	32.054.25	0.62
2	Tool Shrink	124,095.24	2.41
	1. Hoe	10,824.66	
	2. Sprayer	113.270.58	
3	Land lease	5,000,000.00	96.97
	Amount	5,156,149.50	100.00

Source: Author's computation, 2022.

Based on Table 4, it is explained that the average total cost used in paddy rice farming which includes tax costs is Rp. 32,054.25 or with a percentage of 0.62%, the average depreciation cost of equipment is Rp. 124,095.24 or with a percentage of 2.41%, and the average -The average cost of land rent is Rp. 5,000,000 or with a percentage of 96.97%.

Variable Cost

Variable costs or non-fixed costs are costs that within a certain period of time and within certain limits the amount can vary proportionally according to the magnitude of changes in the value of production. The variable costs in this study consist of the cost of seeds, labor, pesticides, and fertilizer costs. For more details can be seen in Table 5.

Table 5. Variable Costs of Paddy Rice Farming Per Hectare

No	Description	Total (Rp)	Percentage (%)
1	Seeds	272,500	4.79
2	Labor	3,458,409.09	69.85
3	Fertilizer	949,049	19.38
4	Pesticides	346,136.36	5.98
	Amount	5,026.136	100.00

Source: Author's computation, 2022.

Based on the variable cost data in Table 5, the average variable cost is IDR 5,026,136, with the highest cost being the average labor cost of IDR 3,458,409.09 (69.85%), then the cost of fertilizer with an average cost of Rp. 949,049 (19.38%), the cost of pesticides with an average cost of Rp. 346,136.36 (5.98%), and the lowest is the cost of seeds with an average cost of Rp. 272,500 (4.79%). Ten tons of paddy rice require the most work, costing more than 50% or even close to 70% in Syngenta. These results demonstrate the critical need for planting and land processing technology to sustain rice growing in Syngenta. Or, to put it another way, mechanization of agriculture is required to grow paddy rice more effectively (Herdiansyah *et al.*, 2023). As a result, ten tons of production per hectare will shortly be attained.

Table 6. Farming revenue, costs, total costs, and income

No	Description	Price of Grain (Rp/Kg)	Volume (kg)	Amount (Rupiahs)
1.	Farming Revenue			
	1. Total Production	3000	6899.09	20,697,272.73
2.	Total revenue			20,697,272.73
	B. Farming Costs			
	1. Fixed Cost			
	a. Land lease			10,000,000.00
	b. Tax			88,636.36
3.	Cost of depreciation			76,466.03
	Tool Total Depreciation			100,466.03
4.	Total Fixed Cost			10,289,568.41
5.	Variable Costs			
	a. Seeds			272,500.00
	b. Labor			3,458,409.09
	c. Fertilizer			949,091.00
	d. Pesticides			346,136.36
	Total Variable Cost			5,026,136.45
	Total Cost			15,315,704.78
	Income			5,381,567.95

Source: Processed Data, 2022.

Based on Table 6, it is known that the average rice production in Syngenta Ten Tons project in Glanggang Village, Beji District, from the respondent farmers is 6899.09 kg of rice per hectare or 6.899 tons per hectare. The production of lowland rice that is managed is partly still for own consumption and part is sold to cover non-rice needs and costs for further production. Respondent farmers usually sell their harvests in the form of grain at a price of Rp. 3,000 per Kg. To find out that lowland rice farming has benefited farmers or not, it is necessary to do calculations. The calculation can be done by way of receipts minus the overall production costs. The total cost required in the respondent's rice farming is Rp.15,315,704.78,-which consists of a fixed cost of Rp. 10,289,568,41, - and the variable cost is Rp. 5,026.136,-. While the receipt of Rp. 20,697,272.73,-. The average income of rice farmers is Rp.5,381,567.95, -.

The paddy rice grown as part of the Syngenta project produces less than the 8 tons per hectare of paddy rice that Indonesia produces on average. However, Syngenta's paddy rice farming yield exceeds The productivity of rice in several Asian countries is Vietnam 5.89 tons per hectare, Indonesia 5.19 tons per hectare, Bangladesh 4.74 tons per hectare, the Philippines 3.97 tons per hectare (Khan, Li and Xia, 2022; Tran, Vu and Goto, 2022). In comparison to Indonesian 2022 produces 5.65 tons of paddy rice per hectare, and in 2023 6.68 produces 6.7 tons per hectare (Prasetyo, 2023). Finally, the Syngenta project's paddy rice production has fallen short of the desired 10 tons per hectare.

Table 7. Total revenue, total cost, and R/C Ratio

No	Description	Value (Rp/Ha)
1	Total revenue	20,697,272.73
2	Total cost	15,315,704.78
	R/C Ratio	1.35

Source: Author's computation, 2022.

Based on the data in Table 6, it can be seen that the average total rice farming revenue is Rp. 20,697,272.73, and the average total cost is Rp.15,315,704.78. From the calculation of the value of the R/C ratio is 1.35, which means that for every one rupiah spent, the farmer gets an income of Rp. 1.35, - which means that the R/C ratio > 1 means that rice farming in Glanggang village can be said to be efficient to run. Or in other words, every rupiah of costs incurred by paddy rice farmers, generates revenue of more than one rupiah. Thus it can be concluded that paddy rice farming in Syngenta project can generate more revenue than the costs incurred. This research is in line with the research results (Arifin and Mahfudz, 2018) with a study entitled "Analysis of Socio-Economic Factors Affecting Rice Farming Income in Sukorejo Village, Sukorjo District, Ponorogo Regency" which states the same thing, that paddy rice farming is also efficient and profitable.

CONCLUSIONS

Based on the results and discussion of labor costs, income, and rice field farming efficiency in the Ten Tons Region: Study in Syngenta Pasuruan, East Java, Indonesia, it can be concluded that: The total cost required for lowland rice farming by respondent farmers in the Ten tons Syngenta area, Pasuruan, is Rp. 15,315,704, -. Which consists of fixed costs of Rp. 10,289,568,41, - and variable costs of Rp. 5,026.136, -. While the labor cost of Rp.3,560,505.05. The income from rice farming in the Ten tons Syngenta area, Glanggang Village, Beji District, Pasuruan Regency is Rp. 5,381,567.95/ha/MT. The total cost incurred in rice farming activities is Rp. 15,315,704.78/ha/MT, and revenue in rice farming is Rp. 20,697,272.73/ha/MT. This means that rice farming in Glanggang Village is still profitable because farmers' income can still cover the total costs incurred during the production process of the rice farming. The R/C ratio for rice farming in the Ten tons Syngenta area in Glanggang village, Beji sub-district, Pasuruan district is 1.35, which means that each cost incurred by rice farmers will generate an income of 1.35 rupiah. Thus, the rice farming is efficient to run.

It is hoped that farmers can reduce production costs, especially on labor costs and equipment depreciation costs. The amount of production should be increased through the efficient and effective use of lowland rice. To increase lowland rice production, junior agronomists should play an active role in providing information to farmers regarding the use of production inputs and PT. Syngenta Indonesia technology to be more effective and efficient to obtain high production so that farmers' incomes can increase. And farmers are expected to be able to apply Syngenta technology without being constrained by costs to

increase income and efficiency of lowland rice farming in the Syngenta ten tons area to support national rice self-sufficiency towards 100 years of independent Indonesia 2045.

However, this study is not without limitations. The research was conducted within a specific geographical area, namely the Ten Tons Syngenta area in Glanggang Village, Pasuruan Regency, East Java, which might limit the generalizability of the findings to other regions with different socio-economic and environmental conditions. The sample size of 22 farmers may also raise concerns about the representativeness of the data, potentially affecting the overall accuracy of the conclusions drawn. Additionally, the study focused primarily on labor costs, income, and efficiency, without delving into other potential influencing factors, such as market fluctuations, weather conditions, or government policies. Therefore, while the findings provide valuable insights into the specific context examined, they should be interpreted within the confines of these limitations when considering their applicability to broader contexts or making policy recommendations.

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