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ANALYSIS OF FACTORS AFFECTING THE PRODUCTION AND INCOME OF RICE FARMING IN RAINFED RICE FIELDS IN BINANGA KARAENG VILLAGE, LEMBANG KABUPATEN PINRANG.

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Abstract

This study aims to determine the factors that affect rice farming in rainfed rice fields in Binanga Karaeng Village, Lembang District, Pinrang Regency. The sampling method was purposive or intentional; the population in this study was 120 rainfed rice farmers. The sampling technique in this study was the Simple Random Sampling technique, so 36 respondents were obtained from 30% of rice farmers in rainfed rice fields in Binanga Karaeng Village, Lembang District, Pinrang Regency. The results showed that rice farming production in rainfed paddy fields in Binanga Karaeng Village, Lembang Subdistrict, Pinrang Regency, amounted to 4,098 kg/ha per growing season. At the same time, the income generated was Rp 24,642.33 ha per growing season. Factors affecting rice farming in rainfed rice fields are land area, seeds, fertilisers, pesticides, and labour. The farm production factors influencing personal factors are land area, seeds, fertilisers, and pesticides. If the land area increases by 1%, then farm production will increase by 0.535%; if rice seeds are added by 1%, then farm production will increase by 0.817%; for fertiliser, if added by 1%, then production increases by 0.409%. If pesticides are added by 1% of users, production will decrease by 0.852%.

Keywords*: Rice Farming, Rainfed, Production, Income*

INTRODUCTION

The agricultural sector is important in providing food for the entire population, raw materials for industry, and export trade. This begins with improving the quality of human resources, where each individual in the household gets adequate, safe, and nutritious food on an ongoing basis, which, in turn, will improve health status and provide opportunities for each individual to reach their maximum potential. Thus, food security is an inseparable component of national security, where national security is closely related to the quality of human resources (Fachruddin Nasution, Yusniar Lubis 2020).

Rice is a very important cultivated crop for humanity, as more than half of the world's population depends on this crop as a food source. Rice is a primary need for the people of Indonesia, as it is a source of energy and carbohydrates for them. In addition, rice is also the most important crop for millions of small farmers in various regions in Indonesia.(Mergono, Carolina 2021). Another factor affecting it is sunlight to get optimal rice production results. Sunlight is very influential in the early phase of planting rice seedlings because it can increase the amount of grain content so that rice productivity results become optimal or increase (Ramadhona, Setiawan, and Bachtiar 2018).

Production is one of the activities that are closely related to economic activities. Through the production process, various goods that humans need can be produced. The production level is also a benchmark for assessing a country's welfare level. So, it is unsurprising that every country competes to increase production globally to increase its per capita income. Production is an activity to create or add value to the use of an item to meet needs. Activities to improve the usability of an object without changing its form are called service production. In comparison, the activity of increasing the usability of an object by changing its nature and shape is called the production of goods.

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Rainfed wetland rice farming is the highest contributor to national rice production after irrigated wetland rice farming. However, the production yield of rainfed wetland rice farming still needs to be considered higher due to the many constraints, such as cultivation technology and weather changes. Rainfed wetland rice farming generally has constraints related to water availability and relies on rainwater as a source of irrigation (Novia and Satriani, 2020).

Rain-fed paddy fields are highly at risk of drought. Because of this condition, it is not surprising that rainfed paddy fields are generally planted only one to two times a year. Rice is a very important cultivated crop for humanity because more than half of the world's population depends on this crop as a food source. There are several types of paddy fields, among others. Irrigated rice fields are rice fields whose source of irrigation is from rivers, which means that it is always available throughout the year. The volume of irrigation water entering the primary, secondary and tertiary channels can be measured. Rain-fed rice fields are rice fields whose irrigation sources depend on water availability from rain and are found in areas with high topography and on the slopes of mountains or hills. Sawah lebak are rice fields in large river deltas found on the left side of river cliffs. Sawah bench is a rice field near rivers and wetland farming systems practised in swampy areas.

Lembang District of Pinrang Regency is one of the rice-producing districts in South Sulawesi Province; it has the following potential: (1) the availability of human resources as rice farming actors who come from farmers, (2) land resources that are quite potential and allow for the development of rice plants, (3) the availability of water resources for irrigation of rice fields and (4) the accessibility of distribution of agricultural products from agricultural producing areas to the Regency Capital.

Table 1. Harvested Area and Production of Rice Paddy by District in Pinrang District.

No	Rice Producer by District	Land Area (Ha)	Production (Ton)
1.	Suppa	1.553	7.431
2.	Mattiro Sampe	11.382	70.363
3.	Lanrisang	1.111	5.400
4.	Mattiro Bulu	11.582	71.252
5.	Watang Sawitto	9.312	59.093
6.	Paleteang	5.522	33.744
7.	Tiroang	11.366	72.151
8.	Patampanua	13.558	78.270
9.	Cempa	11.458	63.878
10.	Duampanua	11.986	69.830
11.	Batulappa	3.371	17.077
12.	Lembang	5.597	32.770
	Pinrang	**97.798**	**581.189**

Source: Pinrang Regency Central Bureau of Statistics 2024

Based on Table 1 above, it can be seen that the harvest area in the Lembang sub-district is 5,597 ha with a total production of 32,770 tons; the sub-district that has the largest amount of production is the Patampanua sub-district with a harvest area of 13,558 ha with a total output of 78,270 while the sub-district that has the lowest amount of production is in pinang district, lanrisang sub-district 5,400 with a harvest area of 1,111 ha (Theodoridis and Kraemer).

RESEARCH METHODS

Research Location and Time

This research has been conducted in Binanga Karaeng Village, Lembang District, Pinrang Regency, for two months, from December 2023 to January 2024. The average population chooses to cultivate rice in Binanga Karaeng Village, Lembang District, and Pinrang Regency on Rainfed Rice Fields. The sample is part of the number and characteristics

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possessed by the population. The sampling procedure used in this study was non-probability with a purposive sampling technique (Muslimin 2021). The sampling technique in this study was simple random sampling technique (Random Sampling), namely sampling from members of the population using random without regard to the level in the population of rice farmers in rainfed rice fields in Binanga Karaeng Village, Kecematan Lembang, Pinrang Regency. With a total population of 120 people, 36 rice farmers were obtained from 30%. The type of data used in this study is ski-native data. The kind of data used is primary data. Primary data is data obtained directly through interviews with informants, filling out questionnaires and direct documentation (According to Husein Umar (2011: 2016).

Data Source Type

The data collection technique in this study uses the following method: (1) Observation is a data collection method carried out by directly observing the object of research. It aims to obtain accurate results because researchers can witness, understand, and pay close attention to objects. (2) Interview, namely in the Big Indonesian Dictionary (KBBI), is a question-and-answer activity carried out by an interviewer as a questioner and a resource person as the person being asked. This activity is carried out to find information, ask for information, or ask someone's opinion about a problem. In other words, it can be concluded that an interview is an activity of extracting information from sources through questions and answers. In this study, interviews are intended to clarify the data obtained through further elaboration by related parties, such as the sources. (3) A questionnaire is a data collection technique that gives respondents a set of written questions. (4) documentation is a collection of files, namely looking for data on things in the form of notes, transcripts, books, newspapers, magazines, inscriptions, minutes, agendas and so on. First, in a broad sense, it includes all written and oral. Second, in the narrow sense, it only consists of all written sources. Third, for a specific reason, it only includes official and state papers, such as treaties, laws, concessions, grants and so on (Nilamsari 2014).

Data Analysis

The analysis used to estimate the factors that affect the production and income of paddy rice in rainfed rice fields is a multiple linear regression analysis model to determine the direction of the relationship between the independent variable and the dependent variable, whether each independent variable is positively or negatively related and to predict the value of the dependent variable if the value of the independent variable increases or decreases. To estimate the regression coefficient using the natural logarithm (ln) to calculate the elasticity value of each independent variable against the dependent variable in the model so that the following equation is obtained:

$$Y = a + b1lnX1 + b2lnX2 + b3lnX3 + b4lnX4 + b5lnX5 + b6lnX$$

Description:
Y = Rice Farming Production (Ton)
a =Constanta
$b1, b2\ and\ b6$ = Regression Coefficient
$lnX1$ = Farm Land Area (Ha)
$lnX2$ = Total Seed Usage (kg)
$lnX3$ = Total Fertilizer Usage (kg)
$lnX4$ = Pesticide Quantity (ml)
$lnX5$ = Tool Usage
$lnX6$ =labour

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According to Soekartawi (2016) states, in calculating the farming of paddy rice using the formula:

$$\boldsymbol{TC = TFC - TVC}$$
$$\boldsymbol{TR = P \times Q}$$
$$\boldsymbol{I = TR - TC}$$

Where:
$I =$ Income
$TR =$ Total Revenue
$TC =$ Total Cost (total cost)
$FC =$ Fixed cost
$VC =$ Variable Cost
$Q =$ Number of Production Units
$Py =$ Price Y

RESULTS AND DISCUSSION

Based on the results of this study, the factors that allegedly affect the production of paddy rice on rainfed land in Binanga Karaeng Village, Lembang Kecematan Pinrang Regency, include Land Area, Number of Seeds, Number of Fertilizers, Number of Pesticides, and Labor.

Linear Regression Analysis

Based on the results of the regression analysis of the research data on each variable factor affecting rice paddies' production on rainfed land in Binanga Karaeng Village,

Table 2. Results of Regression Analysis of Factors Affecting Production Rice Farming in Rainfed Rice Fields in Binanga Karaeng Village, Lembang District, Pinrang Regency.

Free Variable	Coefficient	t-statistic	P
Land Area (LNX1)	0,535110138**	2,936852482	0,00631367
Seed (LNX2)	0,81797486***	4,174871958	0,00023565
Fertiliser (LNX3)	0,409430115***	3,328154232	0,00232232
Pesticides (LNX4)	-0,852408647***	-3,47419939	0,00158139
Labor (LNX5)	0,120831198ns	0,630541742	0,53311448
Constant	8,720992793	5,17396274	1,4253E-05
Coefficient of Determination (R)	0,984826689	193,227046	0,0000
*** = significant (a=0.01)	** = significant (a = 0.05)	* = significant (a = 0.10)	ns = non-significant

LNY = 8,7209 + 0,5351*LNX1 + 0,8179*LNX2 + 0,409*LNX3 – 0,8524*LNX4 + 0,1208*LNX5
Source: Primary Data (processed) (2024).

Factors that affect the production of wet rice on rainfed land in Binanaga Karaeng Village, Lembang District, Pinrang Regency include land area (X1), the number of seeds (X2), the amount of fertiliser (X3), the number of pesticides (X4), and labour (X5). The analysis used is a multiple linear regression model.

Land Area (X1)

The regression coefficient value of the land area is (0.535%); the land area has a significant positive effect with a confidence level of 95% on the production of rice farming in rainfed rice fields, meaning that if the land area increases by 1% (one per cent), then the output of rice farming in rainfed rice fields will increase by 0.535%. This means the more extensive rice farming land will affect the high rice production in Binanga Karaeng Village, Lembang District, and Pinrang Regency.

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Seed (X2)

The regression coefficient value of the seed is (0.817%); the seed has a significant positive effect with a confidence level of 95% on the production of rice farming in rainfed paddy fields, meaning that if the seed increases by 1% (one per cent) then the output of rice farming in rainfed paddy fields will increase by 0.817%. This means the more seeds there are, the more rice production will be in rainfed rice fields in Binanga Karaeng Village, Lembang District, and Pinrang Regency.

Fertiliser (X3)

The value of the fertiliser regression coefficient is (0.409%); fertiliser has a significant positive effect with a confidence level of 95% on the production of rice farming in rainfed paddy fields, meaning that if fertiliser increases by 1% (one per cent), then the output of rice farming in rainfed paddy fields will increase by 0.409%. This means that the fertiliser used is sufficient but can be increased in quantity; with the provision of fertiliser that is sufficient and not excessive (dose/dose), the rice farming land will be fertile, there will be an increase in rice farming production in rainfed rice fields in Binanga Karaeng Village, Lembang District, Pinrang Regency.

Pesticides (X4)

The regression coefficient value of pesticides is (-0.852%); pesticides have a significant negative effect with a 95% confidence level on rice farming in rainfed rice fields, meaning that if pesticides increase by 1% (one per cent), then rice farming production will decrease by 0.852%. This means that pesticides have a significant effect on rice production in rainfed rice fields because the pesticides used are adjusted to the attack of pests and diseases, the use of pesticides is excessive, the use of pesticides must be reduced and adjusted to the dose of use in each rice production in Binanga Karaeng Village, Lembang District, Pinrang Regency.

Labour (X5)

The value of the regression coefficient of labour equals (0.120). Labour has an insignificant positive effect, with a confidence level of 95% in rice farming in rainfed rice fields. This means that if labour has increased by 1% (one per cent), then rice farming production will increase by 0.120%. This means that the labour in rice farming in rainfed paddy fields is sufficient but can be increased in number.

Revenue

Income analysis includes production, fixed costs, variable costs, and profit or income. The intended production is the results obtained from rice farming, which respondents manage once a year. The average production of respondent farmers in rice farming amounted to 4,098 kg/ha with a price per kg of Rp. 5,000, so that the revenue received by farmers amounted to Rp. 33,593,120. Details of respondents' farm income with rice farming in rainfed paddy fields can be described in

Table 2. Analysis of Rice Farming Income in Rainfed Rice Fields in Binanga Karaeng Village, Lembang Subdistrict, Pinrang Regency

DESCRIPTION	QUANTITY (UNIT)	PRICE PER UNIT (RP)	VALUE (RP)
1. Production	4.098	5.000	33.593,120
2. Variable Costs			
a) Seed	32,79	60.000	98.360,66
b) FertilizerPestisida	163,93	120.000	19.672,131
c) Pesticides	-	-	598.952
d) Labor:			

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DESCRIPTION	QUANTITY (UNIT)	PRICE PER UNIT (RP)	VALUE (RP)
Planting (HOK)	22,95	85.000	1.950.819
Harvest (HOK)	26,23	159.000	4.170.491
e) Tool rental (IDR)		8.000	655.737
3. Fixed Costs			
a) Tool depreciation (IDR) - Tax	-	-	54.644
	-	-	22.131
4. Revenue	-	-	24.642,333

Source: Primary Data (processed) (2024).

Table 2 shows that farmers' incomes are generally influenced by several components, namely the amount of production, selling prices, and costs incurred in agriculture. In rice farming in rainfed paddy fields, variable costs for seeds are greater than for production facilities; this can be seen from the high cost of seeds.

The average revenue per hectare obtained by farmers in Binanga Karaeng Village, Lembang Subdistrict, Pinrang Regency, is the value obtained from the average production per ha of 4,098 kg multiplied by the production price of Rp. 5,000 kg. The average cost/ha incurred by farmers is 58,235.453, and the average income/ha received by respondent farmers is obtained from revenue minus total costs, which is Rp. 24,642.333.

CONCLUSION AND SUGGESTIONS

The conclusion that can be drawn from this research is that rice farming production in rainfed paddy fields in Binanga Karaeng Village, Lembang District, Pinrang Regency, amounted to 4,098 kg/ha per growing season. At the same time, the income generated was Rp 24,642.33 ha per growing season. Factors that simultaneously affect rice farming in rainfed rice fields are land area, seeds, fertilisers, pesticides, and labour. At the same time, the farm production factors that affect personnel are land area, seeds, fertilisers, and pesticides. If the land area increases by 1%, then farm production will increase by 0.535%; if the rice seed is added 1%, then farm production will increase by 0.817%; for fertiliser, if added 1%, then production increases by 0.409%. While pesticides, if added to 1% of users, production will decrease by 0.852%.

Suggestions that can be taken from this research are as follows: The authors suggest that the use of pesticides be reduced so that the amount of production can increase.

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