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Factors Affecting Rice Quality in Kasumeeto Village, Pakue District, North Kolaka Regency

AUTHORS INFO

Kartomo
Universitas Sembilanbelas November Kolaka
kartomo2.usn@gmail.com

Nursalam
Universitas Sembilanbelas November Kolaka
noersalam@gmail.com

Helviani
Universitas Sembilanbelas November Kolaka
vhi.helvi@gmail.com

Masitah
Universitas Sembilanbelas November Kolaka
masitah.malla@gmail.com

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Abstract

This study was aimed to determine factors that affect the quality of paddy in Kasumeeto Village, Pakue District, North Kolaka Regency. Discriminant analysis was used as the analytical tool with a sample of 30 respondents. The results was obtained which was to determine the effect of the use of seeds, irrigation and fertilizer on the quality of lowland rice in Kusemeeto Village, Pakue District, North Kolaka Regency, can be conclude that quality of rice can be increase with increase the usage of high quality seeds and increase the usage of fertilizer. Lowland paddy is a commodity that has very promising prospects, so from the results of this study it is recommended that rice farmers should intensify the use of seeds and fertilizers because they can affect the quality of the paddy cultivated.

Keywords: Production Factors, Paddy Farm, Rice Quality

A. Introduction

Paddy is the main food agricultural product in an effort to fulfill national food needs and provide employment opportunities for the majority of the Indonesian population. Several factors have contributed to the importance of paddy farm in Indonesia, including (1) the paddy farm provides employment opportunities for 21 million farming families, (2) rice from paddy farm is a staple food for around 95 percent of Indonesia's population, and (3) about 30 percent of total expenditure of poor households are allocated to buy rice (Suryana et al, 2001). Rice is the main food ingredient for most of Indonesia's population. Increasing population requires rice production to continue to increase. One of the efforts to increase

rice production is to maintain a balance of soil nutrients through fertilization. According to Sutedjo (2002), fertilization is which one of the efforts in order to increase agricultural production, beside the selection of high quality seeds. Even now considered a dominant factor in agricultural production.

Quality is a collection of distinctive characteristics that can distinguish each unit of these materials and have a real influence in determining the degree of consumer acceptance of these materials (Kartika et al, 1988). The quality in this terms is the quality of the senses and the quality of the chemical. The sensory quality of rice is in terms of color, taste, aroma and texture, while the chemical quality is the content of vitamins, nutrients and others contained in the item.

In an order to increase the productivity of the paddy farm in Indonesia, the availability of superior varieties and high-quality seeds is urgently needed. According to Arsyad (2000), the availability of high yielding varieties with high yield potential and responsive to improvement and in accordance with environmental conditions, as well as having other superior characteristics is very much needed. These superior properties can be seen from seeds that have higher yields, shorter lifespans, resistance to pests and diseases. Seeds are genetically controlled, so it depends on the variety.

The appearance of the seeds greatly influences consumer preferences and the type of final product. This is evidenced by the results of a survey conducted by the Balittan Bogor (Iman et al. 1995) in (Nugraha et al. 2000) which shows that restaurants, especially in West Java, always choose large-sized and distinctively colored rice. The basis for their selection is the consideration of quality as the final product. Large beans will make for attractive rice. According to Nugraha et al. (2000) the quality of a food ingredient shows the characteristics of the material. The quality standard of the rice market is mainly determined by the appearance of the rice grains and consumer preferences. The only guidelines available for setting prices and quality levels are the quality standards issued by BULOG. BULOG's quality standards prioritize the level of dryness, dirt content and appearance of seeds. Meanwhile, according to Adisarwanto (2002) the quantity and quality of rice yields is largely determined by the quality of the seeds. Genetic quality, physical quality, physiological quality, and health quality must be met as requirements for quality seeds.Suryana, dkk (2009) mengungkapkan bahwa beberapa permasalahan yang berkaitan dengan usahatani padi sawah antara lain: (a) kepemilikan lahan usahatani yang relatif kecil dan tersebar dan bahkan cenderung mengecil karena adanya proses fragmentasi lahan sebagai akibat dari sistem/pola warisan, (b) terjadinya alih fungsi lahan sawah untuk penggunaan lainnya sebagai akibat perkembangan perekonomian daerah baik untuk pariwisata, perumahan maupun sektor lainnya, (c) keterbatasan debit air irigasi pada beberapa wilayah, terutama pada musim kemarau yang disebabkan saat panen raya, (e) keterbatasan modal usahatani (pupuk, obat-obatan dan pestisida), sehingga produktivitas yang dicapai masih dibawah produktivitas potensialnya dan (f) tingkat serangan hama penyakit yang masih cenderung tinggi.

I Gusti et al., (2012) The problem most often faced by farmers in rice farming activities related to the use of farming production facilities (fertilizers, medicines, labor, etc.) is the ability of farmers to buy these production facilities because of the low accumulation of farming capital required. owned. Farmers often use inputs that are not optimal so that maintenance in farming activities is not adequate. Whereas the use of inputs or production factors such as seeds, urea fertilizer, phonska fertilizer, rainbow, organic fertilizers, pesticides and labor correctly and efficiently will provide benefits to farmers.

The purpose of farmers doing lowland rice cultivation is to obtain production. However, production is not only modest but should be supported by quality, this is because good quality will trigger relatively higher prices compared to those of poor quality. In the research area of Pakue Subdistrict, rice cultivation has been going on for a long time, but the quality of the rice produced by some farmers is different, some are good and some are not, which are categorized by farmers. The progress of the rice field cultivation business is determined by how much income farmers get in running their business. The quality of rice is an important factor for consumers. If consumers are interested in the quality of the rice offered, it will provide continuity of the farming because the market is willing to accept the rice product. For this reason, it is important to know the factors that affect the quality of rice in Kasumeeto Village, Pakue District, North Kolaka Regency.Based on the research problems above, the goal to be achieved in this study is to find out what factors affect the quality of rice in lowland rice farming in Kasumeeto Village, Pakue District, North Kolaka Regency.

B. Literature Review

The factors that affect the quality of rice in this study analyzed what factors significantly affect the quality of rice based on the experience of the respondents in the field so that the type of research that will be conducted is qualitative regarding respondents' responses to the quality of the rice they produce. Several factors that affect the quality of rice include; seeds, irrigation and fertilizers. This is a factor that affects the quality of rice. So that in this study, we will look at the influence both individually and collectively in Kasumeeto Village, Pakue District, North Kolaka Regency.

1. *Farming Concept.*

Farming is a part of the activities on the earth's surface where a farmer, a family or a paid manager cultivates crops or raises livestock. The farmer as a way of life in agriculture is just to fulfill their needs. In the sense that farmers spend time, money and combine inputs to create outputs, farming is seen as a type of enterprise. (Maxwell L. Brown, 1974 in Soekartawi, 2002).

Efficient farming management will bring positive income or a profit, inefficient farming will bring a loss. Efficient farming is farming with high productivity. This can be achieved if the management of the farm is good. The factors of production are divided into two groups:

a. biological factors, such as agricultural land with various levels of fertility, seeds, varieties of fertilizers, drugs, weeds, etc.;

b. socio-economic factors, such as production costs, prices, labor, education level, agricultural status, availability of credit and so on (Soekartawi, 2002).

2. *Paddy (Oryza sativa L.).*

Paddy plants are seasonal crops, including grasses with the following classification :

Divisio	: Spermatophyta
Sub Divisio	: Angiospermae
Klasis	: Monocotyledone
Ordo	: Poales
Famili	: Gramineae
Genus	: Oryza
Spesies	: Oryza sativa L.

Paddy (Oryza sativa L.) belongs to the Gramineae group of plants with stems composed of several segments. The segments are empty ridges. At both ends of the ridge the blank is covered by a book. In the lower book of the segment, the leaf midrib grows which binds the segment to the upper book. In the soil, from each book sprouts grow that produce rice tillers (Siregar, 1980).

The best growth of rice plants occurs in addition to optimal environmental conditions (climate, pests and diseases, and management), as well as optimal land conditions, which isi the soil nutrients and water needed by plants are available enough to support plant growth until harvest, as well as physical, chemical, and chemical conditions. Soil biology can support root growth (Makarim and Las, 2005). The soil suitable for growing rice is loose soil and rich in organic matter. The texture of the soil is clay, dusty loam, or sandy loam. The degree of acidity (pH) is normal, between 5.5 – 7.5, the slope is not more than 8%. Location of open land, 100% light intensity and altitude 0-1300 meters above sea level (Martodireso and Widada, 2001).

3. *Production.*

Production is an activity that converts inputs into outputs. These activities in the economy are usually expressed in product functions. The product function shows the maximum amount of output that can be generated from the use of numbers of inputs using certain technologies. Production is often defined as the creation of use, where use means the ability of goods or services to meet human needs (Sugiarto, 2002).

Production is the result obtained as a result of the working of the factors of production simultaneously namely land, labor, and capital. The high production followed by the increasing income will stimulate farmers to increase their production. A simple theory of production describes the relationship between the level of production of a good and the amount of labor used to produce various levels of production of that good. In the

analysis it is assumed that the other production factors are fixed in number, namely capital and land are considered not to have changed, also technology has not changed, the only factor of production that can be changed is labor (Sukirno, 2004).

Pindyck and Rubinfeld (1999), production is a change from two or more inputs (resources) to one or more outputs (products). In relation to agriculture, production is the essence of an economy. To produce, a number of inputs are needed, where generally the inputs needed in the agricultural sector are the presence of capital, labor, land or natural resources and technology.

Production is an activity to produce goods and services or all the "burden" borne by producers by using production factors (Soekartawi, 1989). Production activities include adding value to an item, time value and added value. Farm production generally consists of; production to be sold, production to be saved for consumption and production to be used to pay taxes and farming (Boediono, 1992).

4. *High Quality Seeds*

Seeds are plant seeds derived from fertilized ovules, used by humans for cropping purposes, as a means to achieve maximum and sustainable production through planting with clear genetic identity and homogeneous stamina performance (Sadjad, 1993). Seeds are multifunctional, namely as species preservers as well as carriers of the characteristics of the species and can be directed to achieve certain goals both for production and quality of the results. Superior seeds are seeds that are pure, healthy and dry, free from disease transmission, free from grass seeds and others (Siregar 1981) in Saheda (2008). High quality seeds must meet the 6 criteria, namely the right variety, the right quality, the right quantity, the right time, the right place, the right price, and the right service (Sadjad, 1993).

To maintain the continuity and biosecurity through the Decree of the Minister of Agriculture No. 460/KPTS/II/1971, the government divides seeds into four seed classes (Sadjad, 1993), which is :

a. Breeder Seed (BS)

Are seeds produced by agencies appointed or under the supervision of plant breeding and Research Institutes and Universities. These seeds are few in number and are the source for basic seed multiplication. Especially for breeder seeds, no certification is carried out. This seed is still pure and is labeled white.

b. Foundation Seed (FS)

Seeds from multiplication of breeder seed (BS) are produced under intensive guidance and strict supervision, so that high varieties and their genetic identity can be maintained. These seeds are produced by agencies or seed breeders in accordance with the provisions of the National Seed Agency which are certified by the sub-Directorate of Seed Quality Development of the Directorate of Food Crops and are given a white label.

c. Principal Seed or Stock Seed (SS)

Principal seeds are seeds that are multiplicated from basic seeds or breeders. This multiplication is conducted by taking into account the level of purity of the variety, meeting the quality standards that have been set and certified by the competent authority and labeled purple.

d. Spread or Extension Seed (ES)

Spread seed is the result of multiplication of type seeds, basic seeds or main seeds that will be distributed to farmers by maintaining the purity level of varieties that meet established seed quality standards and have been certified as spread seeds. These seeds are labeled blue.

5. *Varieties and Product*

In an effort to increase the productivity of farming in Indonesia, the availability of superior varieties and high-quality seeds is urgently needed. According to Arsyad (2000), the availability of high yielding varieties with high yield potential and responsive to improvement and in accordance with environmental conditions, as well as having other superior characteristics is very much needed. These superior properties

can be seen from seeds that have higher yields, shorter lifespans, resistance to pests and diseases. Seeds are genetically controlled, so it depends on the variety.

According to Philip Kotler and Gary Armstrong (2006) defines a product as anything that can be offered to the market to attract attention, use or consumption, which can satisfy a want or need. Products encompass more than just tangible goods. In a broad sense, products include physical objects, services, events, people, places, organizations, ideas or all of these entities.

The development of a product or service involves defining the benefits that a product or service will offer. According to Philip Kotler and Gary Armstrong (2006) these benefits are communicated and delivered by product attributes, including:

a. Product quality, is one of the main positioning of marketers. Quality has a direct impact on the performance of a product. Therefore, quality is closely related to value and customer satisfaction.
b. Product features, is a competitive means to differentiate the company's products from one another. Features that are considered complete by customers generally have a higher price.
c. Product style and design, style is a description of the appearance of the product while design is a larger concept than style. Product style that looks attractive does not necessarily have or make product performance better. In contrast to the design which is the heart of the product. Good design not only has a hand in the appearance of the product but also in its benefits.

C. Methodology

1. Research Design

Questionnaire is a list of questions to be asked of the respondent (object of investigation) consisting of rows and columns to be filled with answers asked (Sugiono, 2007). The questionnaire used in this study used open-ended questions, for example asking the respondent's name and place of residence, and using closed-ended questions, which asked the respondent to choose one of the answers provided for each question. Each question relates to the problem discussed in this study. The measurement of the research questionnaire was carried out using the scale method, where this scale resulted in a very insignificant answer until the answer was very influential in a range of values from 1 to 5. This measurement scale was chosen by the researcher so that respondents had greater opportunity or discretion (maximum value up to 5) in providing an assessment. according to their perceptions and conditions..

2. Technique of Data Analysis

To find out the factors that affect the quality of rice in Kasumeeto Village, Pakue District, North Kolaka Regency, multiple regression equations are used. The factors that influence income in this study are seeds (X1), irrigation (X2), fertilizer (X3), labor (X4), pesticide (X5), and storage (X6). This study uses the SPSS program version 20th. The multiple linear regression equation is as follows:

$Y = f(X1, X2, X3, ...Xn)$ .....(1)

Furthermore, the above equation is formulated into an econometric model as follows: $Y = a + b1X1 + b2X2 + b3X3 + u$ .....(2)

Description :

Y = Quality
X1 = Seeds
X2 = Irrigation
X3 = Fertilizer
a = Constant
b1,b2 = Parameter estimate.
e = error

The test criteria are using Discriminant Analysis

Identify, classify and determine the magnitude of the influence of an object of research.

Hypothesis criteria:

- if H_0 : bi = 0; no influence
- if H_1: bi ≠ 0; there is influence

Testing Criteria :
- ToEG > Sig (No significant effect)
- ToEg < Sig (significantly significant effect).

D. Findings and Discussion

4.1 Respondents Response Quality and Influencing Factors

Analysis of the quality of lowland rice farming and its influence was conducted in this study, including; seed factors, irrigation and fertilization factors that will affect the quality of lowland rice in Kasumeeto Village, Pakue District. The results of respondents' responses consist of:

a). Quality on Paddy Farm

The quality of paddy farm in this study was determined by the respondents themselves based on their experiences. Where the quality is divided into three parts, which is High quality, Medium Qualituy and Less Quality. The results of respondents responses can be seen in the following Figure 4.1 below.

Figure 1. Quality on Paddy Farm Desa Kasumeeto Kecamatan Pakue, 2021

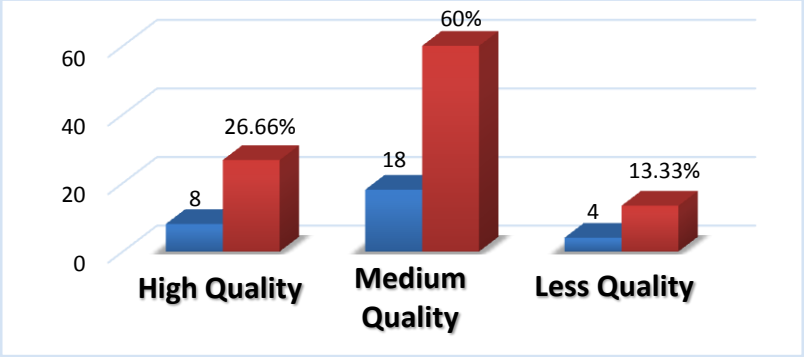

Figure 4.1 shows that the results of respondents' responses to the quality of their rice which indicateed that they were very good were 8 (26.67%) respondents, 18 (60%) respondents said good and 4 (13.33%) said not good. respondents.

b). Paddy Seeds

The procurement of paddy rice seeds in this study was determined by the respondents themselves based on their experiences. So that the quality of the seeds they use, respondents know from the experience they have had during rice farming in Kusumeeto Village. The results of respondents' responses to the rice seeds used by respondents can be seen in Figure 4.2 below.

Figure 2. Paddy Seeds Desa Kasumeeto Kecamatan Pakue, Tahun 2021

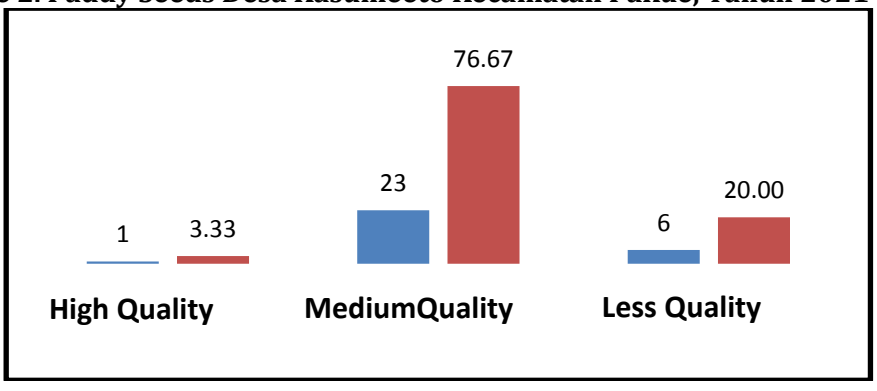

Figure 4.2 shows that the results of the respondents' responses to the rice seeds they used stated that they were High Quality as 1 (3.33%) respondents because the seeds were bought with new seeds so that the quality was guaranteed, which stated that they Medium quality 23 (76.67%) respondents, the seeds are the result of their own creations from their own rice products but are still considered good, only 1-2 tillers, and 6 (20%) respondents stated that they are not good, these seeds are the result of their own process but have been used by the tillers more than 2 times, This was done due to the limited capital of the respondents.

c). Availability of Water (Irrigation)

Water is the most important thing in paddy farm, because it is a condition for the growth of lowland plants. The provision of irrigation for paddy farm in this study was determined by the respondents themselves based on their experiences. So that the availability of water that they use by respondents knows it from the experience they have had during rice farming in Kusumeeto Village. The results of respondents' responses about the availability of water for irrigating rice fields used by respondents can be seen in Figure 4.3 below.

Figure 3. Availability of Irrigation for Respondents Rice Fields in Kasumeeto Village, Pakue District, 2021

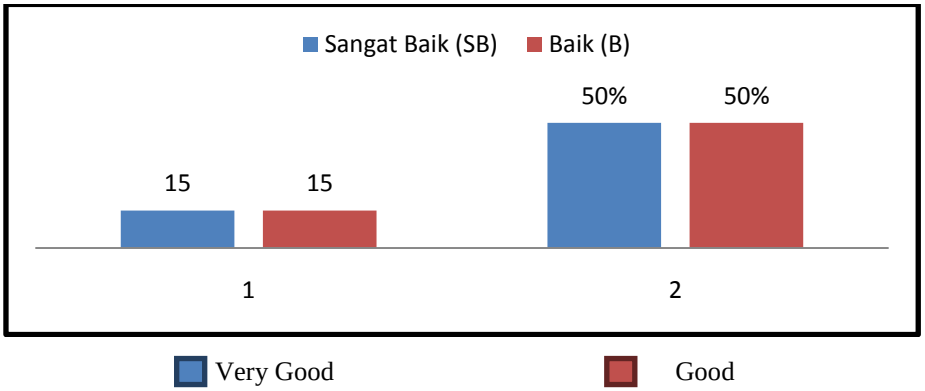

Figure 4.3 shows that the results of the respondents' responses to the rice irrigation they used were stated very good as 15 (50%) respondents and 15 (50%) respondents state good. The results of interviews with respondents that water is in sufficient level..

d). Fertiliizer

The procurement of fertilizer for lowland rice in this study was determined by the respondents themselves based on their experiences. So that the number of fertilizers used by respondents is known from the experience they have had while farming lowland rice in Kusumeeto Village. The results of about the use of fertilizers used by respondents can be seen in Figure 4.4 below.

Figure 4. Distribution of Perception on Rice Fertilizer Application Among Respondents in Kasumeeto Village, Pakue District, 2021

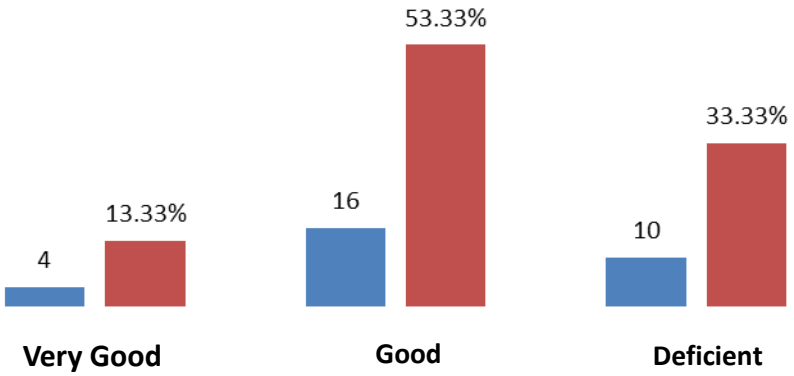

Figure 4.4 showed that the results of respondents responses to the fertilizers they use, for those who stated the amount of use was very good as 4 (13.33%) respondents because the fertilizer used according to respondents was good according to what was used so far. Meanwhile, according to respondents, 16 (53.33%) of respondents stated that the use of fertilizers was considered insufficient that is not according to the portion used so far, but still categorized as sufficient. The respondents stated Not good is about 10 respondents (33.33%), the fertilizer used is considered less than the portion used so far. More or less fertilizer in paddy farm is determined by the availability of capital on respondent farmers, not because of the right composition..

4.2 Results of the Effect of Seeds, Irrigation and Fertilizers on the Quality of Paddy Rice

Cumulative statistical test shows that there is a significant effect. In the Eigenvalues table, the Canonical Correlation number is 0.787, this indicate that 78.7% of the variation in rice quality variable can be explained by the variables of seeds, irrigation and fertilizers.

Tabel 1. Tests of Equality of Group Means

Wilks' Lambda	F	df1	df2	Sig.
0,734	4,887	2	27	0,015
0,959	0,573	2	27	0,570
0,647	7,375	2	27	0,003
Wilks' Lambda	F	df1	df2	Sig.

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1,628[a]	98,1	98,1	0,787

a. First canonical discriminant functions were used in the analysis.

Based on the Equality Tests results on Group Means above, from the three factors of seed, irrigation, and fertilizer partially, it can be seen that the effect of using seeds on the quality of paddy farm has a significant effect. This finding indicates that the amount of seed used depends on the quality, because good quality paddy seeds will support good rice yields. One of the determinants of the quality of rice is the appearance of a very good grain of rice. In this research area, the paddy seeds used are in Medium Quality so that it can support good quality rice.

Other findings showed that the effect of Irrigation to ensure the water availability hasn't significant effect on the quality of rice. Water is an input that functioning to ensure the rice growth process went well, moreover the lack of water can have an impact on decreasing the amount of rice farming production. Although, water does not directly determine the quality of the rice produced later, because the availability of sufficient water is not a dominant factor in determining the quality of rice, but there are still genetic factors and soil nutrients that more responsively affect the level of grain quality than water.

Unlike the case with the influence of fertilizer which significantly affects the quality of rice. In the research area, the use of fertilizers has reached an adequate proportion, as described in Figure 4.4. Provision of good fertilizer will encourage improvement in the quality of the rice produced because fertilizer is the dominant factor other than genetics that become to be another factors to determine the quality of rice.

E. Conclusion

Based on the description in the discussion, to determine the effect of the use of seeds, irrigation and fertilizer on the quality of lowland rice in Kusemeeto Village, Pakue District, North Kolaka Regency, can be conclude that quality of rice can be increase with increase the usage of high quality seeds and increase the usage of fertilizer.

Paddy Farm is a commodity that has very promising prospects, so from the results of this study it is recommended:

1. Paddy farmers should pay attention to the use of seeds and fertilizers because they can affect the quality of the rice cultivated.
2. The government is expected to provide assistance and guidance to farmers, especially in terms of the use of certified seeds and the use of appropriate fertilizers in the research area so that the yield of lowland rice farming is further increased

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