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PROJECTION OF RICE PRODUCTION IN MUSI RAWAS REGENCY

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ABSTRACT
This research aims to determine rice production in Musi Rawas Regency from 2010- 2023 and analyze rice production projections in Musi Rawas Regency from 2024-2030. This research metod is quantitative descriptive research. The data source used in this research is secondary data. Secondary data is rice production time series data. The processed results are presented in the form of tables and graphs. The results of this research show that the forecasting results for paddy production and rice production in Musi Rawas Regency for 2024-2030 experienced a decrease in paddy and rice production. This decline occurred because the final forecast value in the model was negative. The decrease in rice production in 2024-2025 is based on the forecast of 352 tons and rice production of 224 tons. Each year, rice production decreases by 1 to 2 tons and rice production decreases by 0.3 to 1.2 tons per year. the conclusion of this study is The sharp decline was caused by the conversion of agricultural land, especially rice fields, into non-agricultural land for regional development. The suggestion from this research is The government and institutions related to agriculture are expected to make policies that can increase paddy or rice production in Musitrawas Regency. The Musirawas Regency government can also promote government programs, namely food diversification

INTRODUCTION

Rice production is one of the results of agriculture, which is carried out by planting rice seeds and maintaining them and fertilizing them regularly to produce rice production that can be used. Rice is the main food of the Indonesian people, almost all people in Indonesia consume rice every day, so the rice commodity has a very strategic value, apart from controlling the livelihood of many people, it is also a parameter of economic

and social stability of the country. If the community's rice needs are scarce or not met, it will have an impact on inflation and social unrest (Bulog, 2022). To meet the community's food consumption, the availability of rice needs is the government's responsibility to prepare basic foodstuffs (Rohman, 2017). According (Isnaini, 2024), the increase in national rice prices needs to be handled by creating policies that can stabilize rice price so that they do not have an impact on the stability and welfare of the people. Making decisions to create policies related to rice prices can be supported by forecasts.

Forecasting future conditions is very useful for production planning, marketing, finance and other fields. Krismiasari (2012) conducted a study on production forecasting in Kampar Regency using the Box-Jenkins method. Sari & Sukojo (2015) conducted a rice productivity forecasting process obtained by the ARIMA model in Bojonegoro Regency. Ariyanto, Puspitasari & Ericawati (2017) also conducted rice production forecasting using Double Exponential Smoothing Holt using 2 parameters, namely alpha and beta.

Musi Rawas Regency is one of the rice-growing districts in South Sumatra Province. Rice farming has become the main source of livelihood for the villagers, but on the other hand, the rice farming sector is still far from being highly competitive, so it could be a threat to the development of the agricultural sector in the long run. In order to know more about rice production in Musi Rawas Regency, it is necessary to carry out an activity called forecasting.

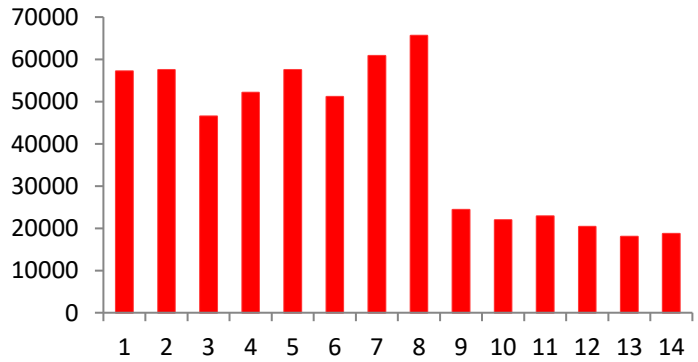


Figure 1. Land Area of Musi Rawas Regency (2010-2023)

The condition of rice fields that experience a reduction in area every year, a fluctuating situation, which shows that the need for rice consumption will continue to increase every year due to the increasing

population. And coupled with the proverb that says "you haven't eaten if you haven't eaten rice". Therefore, an activity is needed to find out early on rice production so that the need for rice consumption can be overcome if there is a decrease in rice production by implementing policies that are considered capable of meeting the need for rice consumption. To find out early on rice production in Musi Rawas Regency, an activity needs to be carried out, namely forecasting/projection.

Wahyudi (2017) states that forecasting is an estimate of the occurrence of a situation in the future, but by using certain methods, forecasting will be more than just an estimate. In this rice production forecasting or projection activity, rice production data from previous years will be used. Therefore, research on forecasting rice production results is a very interesting research topic, which is useful to help the government and related parties in taking policies and preventive measures in Musi Rawas Regency.

RESEARCH METHODS

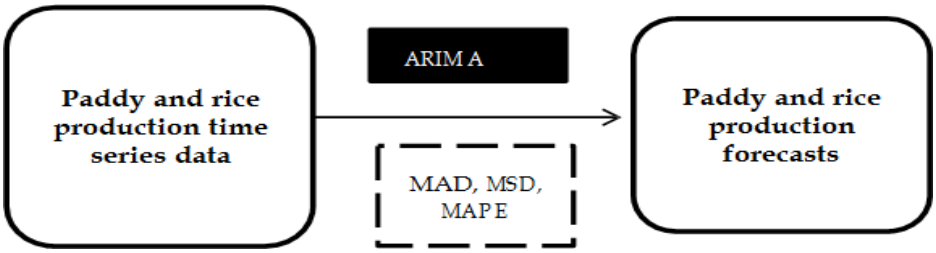
This research has been conducted at Musi Rawas Regency. The source of data used in this research is secondary data. Secondary data was obtained from various sources related to the research in Musi Rawas Regency. For example, journal literature, articles, books, BPS, Department of Agriculture and agencies that provide related data and are needed to achieve the research objectives. The data that will be processed are paddy and rice production data from BPS.

Method of Collecting Data

This research uses secondary data types. The data analyzed for 13 years are time series data from 2010 to 2023 sourced from Central Statistics Agency and other relevant agencies.

Data Analysis Method

Data analysis in this research uses quantitative descriptive analysis. Descriptive analysis according to (Sugiyono, 2014) is a method that functions to describe or provide an overview of the object of study through data or samples that have been collected as they are, without carrying out analysis and drawing conclusions that apply to the general public. The model used in the analysis of this research is as follows.



The Box-Jenkins ARIMA method consists of four stages. The first stage is the identification of data stationarity using the Augmented Dickey Fuller (ADF) test on time series data (Rabbani, 2021). The second stage is model estimation and parameter estimation using the Correlogram plot ACF and PACF to produce a temporary ARIMA (p, d, q) model. Then the ARIMA model is tested for its parameters and selects a significant ARIMA model for the next stage (Windy, 2019). The third stage is model verification which begins with the AIC and SIC tests on ARIMA models that number more than 1 model, where the ARIMA model will be selected if it has small AIC and SIC values (Priyadi & Mardhiyah, 2021). The next is the residual independence test with the criteria of the ARIMA model which is white noise or a probability value of more than 0.05 which is suitable for further study (Windy, 2021).

RESULTS AND DISCUSSION

Musi Rawas Regency Rice Production 2010-2023

Rice production in Musi Rawas Regency from 2010 to 2023 experienced fluctuating conditions. This can be seen in Figure 1 and Table 1, where the state of rice production fluctuates every year, with an average production rate of -0.75. This figure shows that the production rate is not optimal.

Figure 2. Musi Rawas Regency Rice Production 2010-2023. (Source: BDSP2 Ministry of Agriculture, 2023)

Figure 1 explains that rice production in Musirawas Regency experienced fluctuations from 2010 to 2017. Meanwhile, in 2018, rice production experienced a sharp decline. This drastic decline was caused by experts changing the function of agricultural land, especially rice fields, to non- agricultural land for local development. (Ministry of Agriculture, 2019) explains that one of the areas threatened by land conversion is Musi Rawas Regency in Sumatra Province. In the long term, land function experts are the ones who can pose a threat to food security, especially in Musi Rawas Regency.

Forecasting Models

The best forecasting model will be found by considering several indicators. There are three models that will be used to forecast paddy and rice production in Musi Rawas Regency.

Table 1. Model accuracy level

Model Forecasting	**Accuracy Measure**		
	MAPE (%)	**MAD**	**MSD**
Paddy Production			
Autoreggersive			6772271914
Moving Average	1,01351E+02	1,13526E+05	1,29263E+10
Arima			6225216243
Rice Production			
Autoreggersive			2752293633
Moving Average	101	72373	5253312907
Arima			2529966789

Source: Processed Secondary Data, 2024.

In determining which forecasting model is the best, what must be done is to compare the MAPE, MAD, and MSD indicators that have been obtained from each data. The criteria for the best forecasting model if the MAD, MAPE and MSE/MSD values have the lowest values. Based on table 1 above, it can be said that the best forecasting model of the three models is the ARIMA Model (Lastinawati, 2019); (Naya, 2024). This model will later be used in forecasting rice production and rice production.

Paddy Production and Rice Production Forecast for Musi Rawas Regency

The data that will be used to forecast rice production are annual data on rice production and rice production in Musi Rawas Regency. The data will be processed using several forecasting methods and the best forecasting method will be selected. The paddy and rice production data that will be processed are annual paddy and rice production data from 2020 to 2023. Descriptively, the results of the rice production analysis can be seen in Table 2.

Table 2. Descriptive data of paddy and rice production

Information	Paddy	Rice
Mean	205439	130968
Standard Deviation	96616	61593
Minimum	100006	63754
Maximum	388329	247560

Source: Processed Secondary Data, 2024.

The results of forecasting paddy production and rice production for 2024-2030 for Musi Rawas Regency using the ARIMA model are shown in Table 3 below:

Table 3. Forecast of paddy production and rice production in Musi Rawas Regency in 2024-2030.

Year	Land Area (Ha)	Paddy Production (Ton)	Rice Production (Ton)
2024	18600.6	106271	67747.5
2025	18564.9	105919	67523.5
2026	18529.2	105569	67300.2
2027	18493.6	105220	67077.7
2028	18458.1	104872	66855.9
2029	18422.6	104525	66634.8
2030	18387.3	104180	66414.5

Source: Processed Secondary Data, 2024

From the forecasting results shown in Table 3, the results of forecasting paddy and rice production in Musi Rawas Regency show a decrease in paddy and rice production. This decline occurred because the final forecast value in the model was negative. The decrease in rice production in 2024-2025 is based on a forecast of 352 tons and rice production of 224 tons. Each year, rice production decreases by 1 to 2

tons and rice production decreases by 0.3 to 1.2 tons per year. Even though the production has decreased, the amount of paddy and rice production in Musi Rawas Regency can still meet the rice consumption needs in Musi Rawas Regency. The rice consumption needs in Musi Rawas Regency is 1,67 ton rice, so that the community's need for rice is still in a safe condition to meet living needs in 2024.

Based on the projection results in Table 3, it can be seen that paddy production and rice production in Musirawas Regency will experience a decline from 2024-2030. This is due to the reduction of agricultural land (rice fields), so the production will decrease. The Musirawas Regency Government needs to pay attention to this situation by making a policy. This policy was created to achieve a goal or objective, especially in the agricultural sector. In line with the policy of the Ministry of Agriculture (Kementan), which aims to develop agriculture in Indonesia that is more advanced and independent. The program that must be implemented to maintain paddy production and rice production in Musirawas Regency is land pressure. This program, rice production in Musirawas will increase.

However, this is not the only food diversification program that needs to be supported by the government and the people of Musirawas Regency. It is well known that the food diversification program aims to prevent people from becoming dependent on one type of food. It should be noted that this program has been implemented since 2008 under the name P2KP (Accelerated Diversification of Food Consumption) and was changed to KRPL (Sustainable Food Home Area) and finally changed again to P2L (Sustainable Food Home Garden) starting from 2020. With this program, it is hoped that the food consumption of the people of Musirawas Regency will not depend on only one type of plant or raw material, so that the diverse food needs can be met with a balanced and safe food diversity.

CONCLUSIONS AND POLICY IMPLICATIONS

Conclusions

Based on the research results, it can be concluded that rice production from 2010-2023 in Musi Rawas Regency fluctuates every year, with an average production rate of -0.75. This can be seen from 2010 to 2017. While in 2018 rice production decreased drastically. The sharp decline was caused by the conversion of agricultural land functions, especially rice fields, into non-agricultural land for regional development. Projections for rice production and rice production in Musirawas Regency in 2024-2025 decreased by 352 tons for rice production and rice production by 224 tons. Every year rice production decreases by 1 - 2 tons and rice production decreases by 0.3 - 1.2 tons per year.

The government and institutions related to agriculture are expected to make policies that can increase paddy or rice production in Musitrawas Regency. One example is rice field pressure. It is known that rice fields in Musirawas Regency have had land conversion. The Musirawas Regency government can also promote government programs, namely food diversification, so that the Musirawas community does not depend on only one type of food raw material, in this case rice. It is hoped that future researchers can conduct further research.

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