EVALUATION OF THE FLOOD MANAGEMENT IN SELECTED RIVER BASINS PROJECT PROGRAM ON INCREASING THE INCOME OF RICE FARMERS IN PADEGLANG

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Abstract

Based on the results of field research, 1. Characteristics of farmers with a junior high school education: The average age is 41 to 50. 2. The average farmer's income after the FMSRB program is 4.5 million from a land area of 2500-3500 square meters or 1/4 hectare. FMSRB program is the rice planting cycle to 3 times a year. This means that the average income of farmers after FMSRB is around 4.6 million from a land area of 2500-3500 square meters or 1/4 hectare, so the yield is IDR. 1.035.000. farmers only get a net income of 2.6 million rupiah. This large figure is still insufficient to prosper farmers because it can only meet basic needs if averaged every month. Even then, the net income is still lacking because the price of dry rice is only IDR.4.500-5.000 per kilogram according to its quality, where the harvest itself is 8.5-9 quintals, which is 850 kg-900 kg or 1/4 acre. This means that farmers only get a low price for the sale of dry rice even though the price in the market itself is around IDR. 8.500-10.000.

Keywords: FMSRB, Rice, Pandeglang

INTRODUCTION

Based on historical data, climate change has occurred and is projected to continue for a long time, with negative impacts involving various sectors. Global climate change carries severe economic effects and risks, with the total cost equivalent to losing about 5 percent of world GDP annually (Djoehna, 2003). Developing countries, including Indonesia, are expected to experience more significant adverse impacts. The agricultural sector was identified as one of the sectors most vulnerable to climate behavior change (Stern et al., 2006). Rice-based farming is an agricultural sector that is quite vulnerable to climate change(Hariadi. 2011). Extreme climate events in Indonesia, such as drought, rank first as a cause of crop failure. Indonesia is particularly susceptible to flooding due to its climate and topography (Salikin. 2003). Flooding cuts off vital transportation and often disrupts access to ports and airports, restricting the delivery of goods and services. There needs to be a protection system that can help farmers minimize risk. So far, farmers have had several ways to overcome drought, but not enough.

Agriculture is an important sector that ensures sustainable food security in Indonesia, including in Banten province (Syahyuti. 2007). Three districts are located in the Ciujung basin: Serang, Pandeglang, and Lebak. The agricultural sector in Lebak Regency, Pandeglang Regency, and Serang Regency relies on the role of the Ciujung watershed in water supply. Water capacity in the rainy season is often abundant and will

result in submerging the planting area. On the other hand, in the dry season, the collected water can be used effectively and efficiently to irrigate the cultivation of rice or other crops (Pasaribu. 2010). Sustainable agriculture and afforestation should be part of integrated flood risk management. Watershed management will significantly reduce soil erosion and minimize flood runoff.

Conservation efforts along the Ciujung Watershed through Flood Management in the Ciujung Watershed Project or FMSRB Program focus on Improving Flood Risk Management Planning, Improving Land Management and Improving Flood Infrastructure, and Increasing Community-Based Flood Risk Management (CBFRM) Capacity. The planned location of FMSRB-FMSAP activities in 2019 is 8 Districts of Karang Tanjung, Karoncong, Cadasari, Kaduhejo, Pandeglang, Majasari, Mekarjaya, Banjar). Based on the above conditions, the government, through the FMSRB Program, aims to overcome several problems. This concept is expected to positively impact the community, especially those engaged in agricultural business. Based on these problems, the objectives of this study are to 1. know the income of rice farmers who implement the FMSRB program and 2. know whether there is a difference in farmers' income before and after the FMSRB program.

RESEARCH METHODS

Research Location and time

The location of this research was the Pandeglang district, Banten, where the strategic FSMRB program for data collection and documentation was implemented.

Data Type and Sources

The data used in this study was sourced from primary and secondary data. Preliminary data in the form of FMSRB guideline documents, farmer characteristics, and crop yield information before the FMSRB program were obtained through questionnaires (Purwono, 2007).. Secondary data include photos of locations, population, and market prices of crops. The total population in this study is 187 people, consisting of the general public and agricultural business actors, FMSRB program implementers, and involved parties such as rice sellers or agents. Farming-related sampling uses the *Stratified Random Sampling Method*, while samples for analysis of rice agricultural products are carried out using the *Rapid Marketing Appraisal* (RMA) process.

Data Analysis
Profit analysis
$$\pi = TR - TC \text{ or } P1 - P2 \quad \text{...} \quad (1)$$
Information:
π = Income
TR = *Total Revenue*
TC = *Total Cost*
Chi-Square Analysis (χ2)
$$X^2 = \sum\sum \frac{(Oij - Eij)^2}{Eij} \quad \text{...} \quad (2)$$
Information:

X2   = chi-squared value
Oij   = Observation value
Eij   = Expected value
The chi-square test in this study was obtained using *SPSS 26* software.

Hipotesis

      If chi-square counts < chi-square tables, then Ho is accepted. If chi-square count > chi-square table, Ho rejected Test criteria based on χ2 count value compared to χ2 table. The predefined real rate (α = 5% or 1 %) and the free degree (db) = 1, the χ2 value of the table can be obtained in the *chi-square table.*

Ho: There is no difference in farmers' income from the FMSRB program before or after the program.

Ha: There is a difference in the informer's income from the FMSRB program before and after the program.

RESULTS AND DISCUSSION

Income of Paddy Farmers Who Implement FMSRB Program

      The payment of rice farmers who implement the FMSRB program in Pandeglang Regency is related to aspects such as the characteristics of farmers in Pandeglang Regency. The attributes of farmers are categorized based on age, education, length of business, and area of business land.

      Based on the age criteria of farmers, from 187 respondents, there were 66 people with an age range of 21-40 years, 82 people with an age range of 41-50 years, and 39 people with an age range of 51-60 years. The age factor in this study does not limit farmers from carrying out rice farming activities; this is evident from the number of respondents who are elderly and classified as non-productive age who are still doing rice farming business.

      Based on the criteria of education level, there are 67 people with an elementary school education level, 80 with a junior high school education level, and 40 with a high school education level. The education level of rice farmers in Pandeglang Regency is included in the low category. This is due to inadequate economic conditions, so the education available to farmers is relatively low.

      Based on the criteria of farming business experience, 47 people have less than five years of experience, 35 people have 6-10 years of experience, 37 people have 11-15 years of experience, and 68 people have more than 15 years of experience. Furthermore, based on the criteria of land ownership area, 47 people have a land area smaller than 0.1 Ha, 35 people have a land area of 0.1-0.5 Ha, 37 people have a land area of 0.6-1 Ha, and 68 people have a land area of more than 1 Ha.

      Based on the farmers' income level criteria, there are 19 people with an income of more than 4.5 million per planting season. The majority have an income level of 3.5-4.5 million per planting season, with 102 people, and 66 people have an income level smaller than 3.5 million per planting season. The income of rice farmers who get the FMSRB program can increase; of course, it requires all stakeholders' support, assistance, and facilities.

The average income of farmers after FMSRB is around 4.6 million from a land area of 2,500 – 3,500 square meters or 1/4 hectare, which means farmers only get a net income of 2.6 million rupiah. The net income is due to the price of dry rice being only Rp4,500 - Rp5,000 per kilogram according to the quality, where the harvest itself is 8.5 - 9 quintals, which is 850kg - 900 kg or 1/4 hectare.

Significance of Farmer Income FMSRB Program Before and After Program

Table 1. *Output Chi-square*

	Value	*Asymptotic Significance(2-sided)*
Pearson Chi-Squares	18416.643[a]	0,000
N of Valid Cases	187	

Source: Data processed (2023)

Based on the table, it is known that the *value of chi-square is* calculated ($\chi2$), which means that there is a difference in the income of farmers of the FMSRB program before and after the program (Sriyadi. 2015). Based on the interview results, several factors can affect the income of rice farmers in Pandeglang Regency, including irrigation and fertilizer application. Pandeglang Regency relies on Ciujung watershed irrigation to run agriculture. So, it needs more management during the excessive rainy season because it can cause flooding and crop failure. In addition, knowledge of fertilizer doses or application is also an essential factor in rice farming because fertilizer is related to rice productivity. Several obstacles are experienced, such as attacks by birds, rats, and pests (Djiwandi, 1994)..

CONCLUSIONS AND SUGGESTIONS

Based on the results of the study, it can be concluded that the average income of rice farmers in Pandeglang Regency after the FMSRB program is IDR 4,193,058.82 to IDR 5,990,000, with the lowest payment being IDR 2,570,000. Based on the results of the *chi-square calculation,* calculate 18,416,643 > *chi square table* 219.91 so that Ho is rejected, meaning that there is a difference in the income of farmers of the FMSRB program before and after the program.

Suggestions or recommendations that can be given related to this research are the implementation of farmer group assistance through the FMSRB program so that it can help increase farmers' income through effectiveness in land conservation management and reduce the risk of flooding and land erosion. Further researchers are expected to complement this study by adding other factors affecting rice farm income and analyzing them with different analysis techniques.

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