



## ANALYSIS OF FARMERS' PARTICIPATION IN THE RICE FARMING INSURANCE PROGRAM (AUTP) IN SILAU RAKYAT VILLAGE, SEI RAMPAH DISTRICT, SERDANG BEDAGAI DISTRICT

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### Abstract

*The agricultural sector is always faced with risks and uncertainties that can harm farmers. Therefore, there is a need for systematic and institutionalized efforts to reduce these risks and uncertainties, namely through agricultural insurance. This study aims to analyze the factors that influence farmers' participation in the AUTP program. This study involved 60 respondents. To analyze the level of farmers' participation in AUTP program, it is calculated using Likert Summated Rating scale and to analyze the factors influencing farmers' participation in AUTP program using multiple linear analysis method. The results of the study show that the factors that influence farmers' participation in the AUTP program in Silau Rakyat Village, simultaneously all independent variables have a significant effect on the dependent variable. However, partially, only the variables of income, farming experience, AUTP information, program benefits, and frequency of crop failure have a significant effect on farmers' participation in the AUTP program, while the variables of land area, socialization, and frequency of socialization have no significant effect on farmers' participation in the AUTP program in Silau Rakyat Village.*

*Keywords: farmers' participation, agricultural insurance, AUTP program, paddy rice*

### Introduction

Businesses in the agricultural sector will technically always be faced with a fairly high risk of uncertainty. These risks and uncertainties are caused by climate change, floods, droughts, pest and plant disease attacks, and market price uncertainty that can harm farmers. If left unchecked, this will have an impact on the stability of national food security, especially the production and availability of the staple food rice. The food security program initiated by the government offers one way to compensate for crop failure with systematic and institutionalized efforts to reduce these risks and uncertainties through agricultural insurance (Syakir et al. 2016).

Insurance is not new to the agricultural sector. Several developed and developing countries have implemented agricultural insurance policies. India, Brazil and the USA are countries that take an Area-Yield Index Base approach to agricultural insurance, where all risks that can reduce yields are covered in a larger area (district). India, Mexico, Canada and some African countries approach agricultural insurance based on weather (Weather Base) where risks are measured based on weather/climate positions (drought, excessive rainfall, hail). Meanwhile Europe, North America, Latin America, China, South Korea take a traditional insurance approach where risks occur from natural disasters, forest fires, droughts, floods, and others (Insyafiah and Wardhani, 2014).

Agriculture is one of the sensitive elements in people's economic life because fluctuations in availability and prices will have implications for other related sectors (Septian and Anugerah 2014). The agricultural sector includes food crops, livestock, horticulture, plantations, fisheries and forestry. Insurance for farming can be a solution to cope with climate change that is difficult to predict. In the language of law and economics, insurance can be interpreted as a form of risk management that is principally used to avoid various risks of loss, or loss. Insurance can also mean a form of transfer of the risk of loss from one entity to another through a risk management payment system. Irham and Wijayanto (2020), Farmers' involvement in the farm insurance program is influenced by their understanding of the benefits and procedures of the program. The level of asset ownership and financial capability of farmers are also important factors that influence their participation in the farm insurance program.

Saragih (2018) stated that the participation of rice farmers in the AUTP (Rice Farming Insurance) program is still low because the opportunity and impact of risks with damage intensity  $\geq 75\%$  are still rare. In addition, the

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coverage value determined by AOTP cannot fulfill the total costs incurred by farmers, which causes farmers not to participate in AOTP. In general, agricultural insurance aims to help farmers reduce the level of losses due to yield loss, reduce the risks faced by credit institutions, and increase farmers' access to these institutions (Ministry of Agriculture, 2017).

Indonesia itself is also familiar with the agricultural insurance program which has been created by the government. There are two types of agricultural insurance programs, namely Cattle Farming Insurance (AUTS) and Rice Farming Insurance (AOTP). Rice farming insurance is a type of insurance specifically designed to provide protection against the risks faced by rice farmers (Ministry of Agriculture, 2017).

According to Prawiroatmodjo (2008), farmer participation in the rice farming insurance program (AOTP) is influenced by various factors, such as individual farmer characteristics, farming business characteristics, and government support. Other researchers, Irham and Wijayanto (2020) stated that farmers' involvement in the farm insurance program is influenced by their understanding of the benefits and procedures of the program. The level of asset ownership and financial capabilities of farmers are also important factors that influence their participation in farm insurance programs (Saptana et al. (2016)

The insurance working group carried out agricultural insurance public hearings in Tabanan-Bali and South Sumatra districts (East Oku district) to obtain information in the field. Apart from compiling studies, since 2012, AOTP has carried out program trials by the government in various provinces. The trial was carried out in three stages. The first stage was carried out in the planting season from October 2012 to March 2013 in the provinces of South Sumatra (East Oku district), East Java (Tuban and Gresik districts), and West Java (Karawang district).

The second phase of trials was carried out in the planting season from October 2013 to March 2014 in the provinces of South Sumatra and East Java. The third phase of trials was carried out in the planting season from November 2013 to April 2014 in East Java Province. The principle of agricultural insurance implemented during the trial is indemnity. After testing three times, in 2015 the government officially implemented rice farming insurance nationally.

Silau Rakyat Village is one of 17 villages in Sei Rampah Sub-District, Serdang Bedagai Regency. Most of the residents of Silau Rakyat Village work as farmers, agriculture is the main sector in this village. Agricultural land is used to grow various types of crops such as rice, corn and vegetables. The rice land area in Silau Rakyat Village is 248 ha with a total of 516 farmers.

Farmers in Silau Rakyat village continue to experience flooding problems on their agricultural land which results in crop failure when cultivating food crops, especially rice. This failure encouraged farmers to look for solutions to this problem. One of the programs provided by the government to alleviate the problems experienced by farmers is the AOTP program. In general, farmers agree with programs that can provide relief to farmers in the event of crop failure (Primandita et al. 2018). Farmers who take part in rice farming insurance also feel protected because they receive compensation for losses suffered if a crop fails. The aim of this research is to analyze factors influencing farmer participation in the AOTP program in Silau Rakyat Village.

**Research Methods**

The research was conducted in Silau Rakyat Village, Sei Rampah District, Serdang Bedagai Regency, North Sumatra Province. The choice of location in this research was carried out deliberately (proposive). Because the people of Silau Village are one of the recipients of the AOTP agricultural insurance program. The research object was rice farmers in the village of Silau Rakyat who participated in the AOTP program. The scope of this research is to analyze the factors that influence farmer participation in Silau Rakyat Village, Sei Rampah District, Serdang Bedagai Regency.

In connection with the problem raised, an analysis will be carried out based on the data obtained using the data analysis method in the form of Multiple Regression Analysis, an analysis that measures the influence of the independent variable on the dependent variable, where the independent variable (X) contains two or more variables on the dependent variable (Y). The data required include: income, land area, farming experience, AOTP information, socialization, program benefits, frequency of crop failure, and frequency of socialization which is thought to influence participation in the AOTP program in Silau Rakyat village, which is categorized as an independent variable (X) which influences the dependent variable (Y), farmer participation in the AOTP program. The general form of the multiple linear regression equation is as follows:



$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + \dots + b_8 X_8 + e$$

## Results and Discussion

Multiple linear regression analysis in this research was carried out to analyze the influence of the independent variables, namely income, land area, farming experience, AUTP information, socialization, program benefits, frequency of crop failure, and frequency of socialization on the dependent variable, namely farmer participation in the AUTP program. The results of the analysis can be seen in the table below:

Table 1. Analysis Results factors that influence farmer participation in the AUTP program

Variable	Coefficient	Sig.T
(constant)	-1,052	0.136
Revenue (X1)	-0.57	0.023
Land Area (X2)	0.61	0.182
Farming Experience (X3)	-0.67	0.026
AUTP Information (X4)	0.90	0.018
Socialization (X5)	0.005	0.866
Program Benefits (X6)	0.065	0.006
Frequency of Crop Failure (X7)	0.70	0.002
Frequency of Socialization (X8)	0.099	0.137
R Square	0.795	
Sig. F	0,000	

Data source; Primary data processed (2024)

### Simultaneous Test (F Test)

The F test aims to show whether all the independent variables included in this research have a joint influence on farmer participation. The test criteria are if the Sig value is  $> 0.05$ , it means that the independent variable has no influence on the independent variable and vice versa. Based on Table 22, the results of the simultaneous test or F test with a significance value (Sig.) of 0.000 which is smaller than 0.05 shows that the overall regression model used is significant. This means that the independent variables consist of income ( $X_1$ ), land area ( $X_2$ ), farming experience ( $X_3$ ), AUTP information ( $X_4$ ), socialization ( $X_5$ ), program benefits ( $X_6$ ), frequency of crop failure ( $X_7$ ), and frequency of socialization ( $X_8$ ). together they have a significant influence on the dependent variable, namely farmer participation in the AUTP program (Y).

### Partial Test (T Test)

The t test aims to test the effect of each independent variable, namely income, land area, farming experience, AUTP information, socialization, program benefits, frequency of crop failure, frequency of socialization on the dependent variable, namely the farmer's decision to participate in the rice farming insurance program (AUTP). . An independent variable is said to have an influence on the dependent variable if the significant value is  $< \alpha (0.05)$ . Based on Table 1, it can be concluded, among other things:

#### 1. The Effect of Income on Farmer Participation in the AUTP Program

The income regression coefficient ( $X_1$ ) is -0.57, which means that if there is a decrease in farmer income by 1%, the level of farmer participation will increase in the AUTP program by 0.57%. Interpretation of the t test on the income variable ( $X_1$ ) with a significance value (Sig.) of 0.023 which is smaller than 0.05 shows that income has a significant influence on farmer participation in the Rice Farming Business Insurance program (AUTP). This means that differences in income are statistically significant in explaining variations in farmer participation in the AUTP program. Therefore, income is an important and influential factor in determining whether farmers will participate in the AUTP program or not. The t test results show that a stable and adequate increase in income not only meets daily needs but also allows farmers to save or invest, which in turn encourages them to participate in the AUTP program. Farmers who feel that their income tends to decrease every year make them anticipate crop failure by participating in the AUTP program. Because what causes a decrease in income is pest attacks, diseases in rice plants and also occurs due to land flooding during the rainy season. When farmers feel that their income is stable



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*Eva Wardah<sup>1</sup>, Adhiana<sup>2</sup>, Setia Budi<sup>3</sup>, Zulfathi Sidhqi<sup>4</sup>*

and profitable, farmers see the added value of agricultural insurance as a form of protection against unwanted income fluctuations. The AOTP program secures farmers' financial prosperity by providing effective insurance protection, exceeding production costs, and protecting against the risk of crop failure due to natural disasters and extreme weather (Mastini et al, 2023).

**2. The Influence of Land Size on Farmer Participation in the AOTP Program**

The regression coefficient for land area (X2) is 0.61, which means that if there is an increase in land area by 1 hectare, it will increase farmer participation in the AOTP program by 0.61%. Interpretation of the t test on the land area variable (X2) with a significance value (Sig.) of 0.182 which is greater than 0.05 indicates that land area does not have a significant influence on farmer participation in the Rice Farming Business Insurance program (AOTP). This means that, in the context of this research, differences in the area of land owned by farmers are not statistically significant in explaining variations in farmer participation in the AOTP program. In other words, land area is not considered a determining factor whether farmers will participate in the AOTP program or not.

**3. The Influence of Farming Experience on Farmer Participation in the AOTP Program**

The regression coefficient for farming experience (X3) is -0.67, which means that if farmers have low experience it will increase farmer participation in the AOTP program by 0.67%. Interpretation of the t test on the farming experience variable (X3) with a significance value (Sig.) of 0.026 which is smaller than 0.05 shows that farming experience has a significant influence on farmer participation in the Rice Farming Business Insurance program (AOTP). This means that differences in levels of farming experience are statistically significant in explaining variations in farmer participation in the AOTP program. Therefore, farming experience is an important factor influencing farmers' decisions to participate in the AOTP program.

The significant t test results indicate that farmers who have more experience tend to be better prepared and perhaps more open to innovations such as the AOTP program which aims to protect against the risk of crop failure. Experience can also increase farmers' ability to plan and manage farming effectively, which in turn can increase their interest in taking part in agricultural insurance programs. At first, the implementation of the AOTP program in Silau Rakyat Village was not easily accepted by farmers. Farmers in Silau Rakyat Village do not easily accept new innovations in the agricultural sector offered by the government and insurance institutions because of farmers' distrust before there are actual results from the program and distrust of insurance institutions. However, as time goes by, farming experience increases and we see evidence that other areas have been helped to overcome losses due to crop failure due to participating in the AOTP program.

After experiencing the benefits of participating in the AOTP program, such as getting guarantees in the event of crop failure and getting claims that can be used to cover capital. Farmers in Silau Rakyat Village have made agricultural insurance an option for farmers as a means of transferring the risk of crop failure. In accordance with research by Mulyati et al (2014), that with long experience of lowland rice farming, farmers will be more skilled in overcoming obstacles and challenges that may occur during ongoing farming. The longer the farming experience of farmers in Silau Rakyat Village, the more experience or strategies the farmers will have to overcome crop failure. An approach that considers farming experience factors can help strengthen the implementation of agricultural insurance programs and increase their benefits for farmers in the field.

**4. The Influence of AOTP Information on Farmer Participation in the AOTP Program**

The AOTP information regression coefficient (X4) is 0.90, which means that if there is an increase in information by 1 times the frequency it will increase farmer participation in the AOTP program by 0.90%. Interpretation of the t test on the AOTP information variable (X4) with a significance value (Sig.) of 0.018 which is smaller than 0.05 shows that information about the Rice Farming Business Insurance program (AOTP) has a significant influence on farmer participation in the program. That is, differences in the level of information received by farmers are statistically significant in explaining variations in farmer participation in AOTP. This shows that good and easily accessible information plays a crucial role in influencing farmers' decisions to take part in agricultural insurance programs.

Information about AOTP is very important for farmers, because by knowing about AOTP, farmers may be interested and will want to know more about AOTP. Based on field research, information about the AOTP



program, clear and reliable information from farmer groups or related institutions, not only increases farmers' knowledge about the benefits of agricultural insurance, but can also influence their attitudes towards participating in this program, and vice versa, farmers who do not know information about AOTP do not will look for further information regarding the AOTP program. The results of this research are in accordance with research by Marphy TM, Priminingtyas DN. (2019) that lack of information results in farmers' lack of awareness of the importance of agricultural insurance. Thus, efforts to increase access and effective dissemination of information about AOTP can be an effective strategy in increasing farmer participation and supporting the long-term sustainability of this program.

#### 5. The Influence of Socialization on Farmer Participation in the AOTP Program

The socialization regression coefficient (X5) is 0.005, which means that if there is an increase in socialization by 1 times the frequency, it will increase farmer participation in the AOTP program by 0.005%. Interpretation of the t test on the socialization variable (X5) with a significance value (Sig.) of 0.866 which is higher. greater than 0.05 indicates that socialization does not have a significant influence on farmer participation in the Rice Farming Business Insurance (AOTP) program. These results indicate that variations in the level of socialization received by farmers are not statistically significant in explaining variations in farmers' participation in agricultural insurance programs. Based on the results of research interviews, it is known that the presence or absence of outreach activities from the AOTP program has no effect on farmer participation

#### 6. The Influence of Program Benefits on Farmer Participation in the AOTP Program

The program benefit regression coefficient (X6) is 0.065, which means that if there is an increase in program benefits of Rp. 1, it will increase farmer participation in the AOTP program by 0.065%. Interpretation of the t test on the program benefit variable (X6) with a significance value (Sig.) of 0.006 which is smaller than 0.05 shows that perceptions of program benefits have a significant influence on farmer participation in the Rice Farming Business Insurance (AOTP) program. And it shows that farmers who feel clear benefits from agricultural insurance programs tend to be more interested in participating in them.

The benefits of the AOTP program obtained by AOTP participating farmers are in the form of protection from the threat of crop failure as a result of the risk of flooding, drought, disease and attacks by plant pests. This protection is like getting coverage from the insurance company of IDR. 6,000,000/hectare of land area (Insyafiah and Wardhani, 2014). The significant t test results indicate that the clarity and usefulness of the program in protecting income and reducing the risk of crop failure are important factors that motivate farmers to take part in this program.

Overall, these interpretations highlight the importance of effective program-benefit communication in increasing farmer participation in agricultural insurance programs. Positive perceptions of the benefits provided by the program can change farmers' attitudes and behavior, as well as increase their confidence in the long-term sustainability of this program. Therefore, efforts to continue to educate farmers about the benefits that can be obtained from agricultural insurance programs are key to expanding the scope and effectiveness of implementing this program in the field.

#### 7. The Effect of Harvest Failure Frequency on Farmer Participation in the AOTP Program

The regression coefficient for the frequency of crop failure (X7) is 0.70, which means that if there is an increase in frequency of 1 times the frequency it will increase farmer participation in the AOTP program by 0.70%. Interpretation of the t test on the variable frequency of crop failure (X7) with a significance value (Sig.) of 0.002 which is smaller than 0.05 shows that the frequency of crop failure has a significant influence on farmer participation in the Rice Farming Business Insurance program (AOTP). These results indicate that differences in the frequency of crop failure experienced by farmers in the last five years are statistically significant in explaining variations in their participation in agricultural insurance programs. Based on field research, crop failures that occurred in 2022, almost the average farmer experienced crop failure. Crop failure can be a lesson for farmers in making the decision to participate in the AOTP program. This is in line with research conducted by Kawanishi et al (2016) regarding farmers' demand for farm insurance in Indonesia. Based on research, it is known that the experience of crop failure has a big impact on whether to take insurance. Therefore, this significant t-test result

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*Eva Wardah<sup>1</sup>, Adhiana<sup>2</sup>, Setia Budi<sup>3</sup>, Zulfathi Sidhqi<sup>4</sup>*

shows that agricultural insurance programs such as AOTP can attract farmers who face a higher risk of crop failure, and provide them with guarantees. protection needed to maintain the sustainability of their agricultural business. Overall, these interpretations underscore the importance of crop failure frequency as a factor influencing farmer participation in agricultural insurance programs. Efforts to increase awareness about the benefits of protecting against the risk of crop failure through insurance programs such as AOTP can be more effective if they are adjusted to the level of risk experienced by farmers in various regions.

**8. The Effect of Frequency of Socialization on Farmer Participation in the AOTP Program**

The regression coefficient for the frequency of socialization (X8) is 0.099, which means that if there is an increase in the frequency of socialization by 1 times the frequency it will increase farmer participation in the AOTP program by 0.099%. Interpretation of the t test on the variable frequency of socialization (X8) with a significance value (Sig.) of 0.371 which is greater than 0.05 shows that the frequency of socialization does not have a significant influence on farmer participation in the Rice Farming Business Insurance program (AOTP). These results indicate that the variable in the frequency of socialization attended by farmers in the last five years is not statistically significant in explaining the variable in farmer participation in the agricultural insurance program.

**Conclusion**

The factors that influence farmer participation in the AOTP program in Silau Rakyat Village can be seen from Simultaneously all independent variables have a significant effect on the dependent variable. However, partially, only the variables income, farming experience, AOTP information, program benefits, and frequency of crop failures have a significant effect on farmer participation in the AOTP program, while the variables of land area, socialization, and frequency of socialization do not have a significant effect on farmer participation in the AOTP program. in Silau Rakyat Village. The government and Jasindo should pay more attention to technical outreach and frequency in providing information related to AOTP, such as conducting outreach at the start of the planting season and ensuring that participants present receive information so as to increase farmers' interest in AOTP.

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