

Efforts To Increase The Participation Of Paddy Farmers In Paddy Fields In The Program Insurance Paddy Farming (Ipf) In Tanah Bumbu Regency

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Abstract. Various risks and uncertainties in farming, especially rice production, effective handling strategies are needed in addition to helping farmers in terms of production and economy, which helps motivate farmers to run rice farming. Systematic strategies that have been implemented by the government and have been running in various regions namely the agricultural insurance program. This study aims to analyze the characteristics of rice farmers households, respondents of rice farmers and what factors influence the participation of rice farmers in the Rice Farmers Business Insurance (AUTP) program in Tanah Bumbu Regency. The results of the analysis show that the majority of formal education levels of AUTP farmers are Pertam Middle Schools and non-AUTP farmers namely Primary Schools. The activeness in farmer groups AUTP farmers ranged between 5-6 meetings, while farmers not AUTP namely 3-4 meetings. The area of land cultivated by AUTP farmers and not AUTP majorities is 0.51 - 1.00 ha. The majority of AUTP farmers' rice farming experience is between 11-20 years, while non-AUTP farmers are between 21-30 years. The risk of possible failure of AUTP farmers and not AUTP farmers ranged from 11-20 percent. The risk of damage to AUTP farmers' harvest is in the majority between 31 - 40 percent, while non-AUTP farmers range between 21 - 30 percent. 2. Farmers who responded positively to the AUTP Program were 100.00% of farmers who participated in the AUTP program, while the remaining 16.00% who responded negatively and 84.00% who responded very negatively from farmers who were not AUTP participants. While the factors that significantly influence the AUTP program in paddy fields are activeness in farmer groups, the area of land cultivated, rice farming income, the risk of possible crop failure and the risk of crop damage.

Keywords: farmer participation, paddy fields, insurance for rice farming

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I. Preliminary

The Paddy Farming Business Insurance Program (AUTP) is a form of program organized by the government in order to see the extent to which this program can effectively protect farmers from the threat of crop failure. Tanah Bumbu Regency has a fairly large agricultural land and has many agricultural commodities. Most of the population lives on farming. Agriculture is one of the businesses that are prone to the negative impacts of climate change such as floods and drought that cause crop failure. In addition, the attack of plant-disturbing organisms (OPT) which lately can no longer be avoided by farmers, also causes crop failure. The area of paddy fields that participated in the AUTP program in Tanah Bumbu Regency in the 2017 OKMAR period was 648.5 ha (Agriculture Office of Tanah Bumbu Regency, 2017).

The ability of farmers to adapt to climate change and the handling of these pest attacks is generally constrained by capital, technology adoption, access to information and market access. This condition can be a factor causing crop failure farmers do their business.

Seeing the various risks and uncertainties in farming, especially rice production, effective coping strategies are needed in addition to helping farmers in terms of production and economy, which helps motivate farmers to run rice farming. Systematic strategies that have been implemented by the government and have been running in various regions namely the agricultural insurance program.

Goals and usage

This study aims to analyze: (1) farm household characteristics participating in the Paddy Farming Business Insurance Program (AUTP); (2) farmers' responses to the Rice Farmer Business Insurance (AUTP) program; (3) what factors influence the participation of rice farmers in the Rice Farmers Business Insurance (AUTP) program in Tanah Bumbu district.

The benefits of this research: (1) as one of the literature for the sake of further research in the same interests and related; (2) as one of the recommendations / input for the development of the Rice Farming Business Guarantee Program for the community and the government.

II. Method

Place and time of research

This research was conducted in KusanHilirSubdistrict, Tanah Bumbu Regency, from September 2018 to November 2019.

Data Types and Sources of Data

In this study the data used are primary and secondary data. Primary data obtained from the results of direct interviews with respondents who became the study sample. While secondary data is data obtained based on institutional library studies and related agencies in this study, such as the Central Statistics Agency of South Kalimantan Province, Central Statistics Agency of Tanah Bumbu Regency, Department of Food and Horticultural Plants of South Kalimantan Province, Department of Agriculture of Tanah Bumbu Regency, Extension Center Agriculture (BPP) Mudalang, KusanHilir District.

Sampling method

This research was conducted using a purposive sampling method, on the KusanHilir District, with consideration of having the largest number of rice farmers and having the highest number of rice farming insurance participants compared to other districts in Tanah Bumbu Regency. The villages selected in KusanHilirSubdistrict were based on the largest number of farmers being a participant in rice farming insurance. The number of samples that will be used in this study are 100 farmers, 50 farmers participating in AOTP and 50 farmers not participating in AOTP.

Data analysis

The data analysis method used to answer the first and second objectives is descriptive method. Descriptive research aims to make the capturing / painting / description of the facts and properties of a population or certain area systematically, factually, and thoroughly.

To answer the third goal, which is to know factors (length of formal education, activeness in farmer groups, area of land cultivated, experience of rice farming, rice farming income, risk of possible crop failure and risk of damage to harvest) that affect farmers' participation in the Business Insurance program Rice Farmers (AOTP) were analyzed using logistic regression analysis. as follows (Agresti, 1996):

$$\text{Logit} [\pi(x)] = \text{Ln} \left[\frac{p}{1-p} \right] = g(x) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + B_4 X_4 + \beta_5 X_5 + B_6 X_6 + \beta_7 X_7 \dots \dots \dots (1)$$

with:

$g(x)$:estimated value of logit (1 = farmers participating in AOTP; 0 = farmers not participating in AOTP)

α : intercept

β : logistics coefficient (1,2, ..., 7)

X_1 : length of formal education (years)

X_2 : activity in the farmer group (number of times)

X_3 : land area cultivated (ha)

X_4 : rice farming experience (years)

X_5 : rice farming income (Rp)

X_6 : risk of possible crop failure (%)

X_7 : risk of crop damage (%)

According to Hosmer&Lemeshow (2000), for testing the simultaneous effect of the whole independent variable through the G test statistics, the G Test is formulated as follows:

$$G = -2 \text{Ln} \left[\frac{L_0}{L_1} \right] \dots \dots \dots (2)$$

with:

L_0 : likelihood without the explanatory variables (modelconsisting only of constants only)

L_1 : Likelihood with the explanatory variables (modelconsists of all variables)

By hypothesis is as follows:

$H_0: \beta_i = 0$

$H_1: \beta_i \neq 0$

Test G follows the X^2 distribution with p degrees of freedom, so that the rules of using statistical hypothesis testing as follows:

H_0 rejected if $G_{\text{count}} \geq X^2_{k(p)}$

H_0 accepted if $G_{\text{count}} < X^2_{k(p)}$

As for the partial test Wald test was used, namely by the formula:

$$W_i = \frac{\beta_i}{SE_i} \dots \dots \dots (3)$$

with:

β_i : Logistic regression coefficient values for the variable i-th

SE_i : the value of the standard error for the variable i-th

By hypothesis is as follows:

$H_0: \beta_i = 0$

$H_1: \beta_i \neq 0$

Wald test follows the standard normal distribution, so the decision rules are as follows:

H_0 is rejected if $|W_{count}| > Z_{\frac{\alpha}{2}}$

H_0 accepted if $|W_{count}| \leq Z_{\frac{\alpha}{2}}$

For the interpretation of coefficients performed by the coefficient odds ratio (trend), with the following formula:

$$P_i = \frac{Odds\ 1}{Odds\ 2} = \frac{\frac{p_1}{1-p_1}}{\frac{p_2}{1-p_2}} \dots \dots \dots (4)$$

with:

P_i : Chance to occur ($Y = 1$)

$1-P_i$: An opportunity to not happen ($Y = 0$)

III. Results And Discussion

Characteristics of Rice Farmer Household Participants in the Rice Farming Business Insurance Program (AUTP)

Formal education level. The quality of the human resources of the population in an area can be seen from the level of education that has been completed by the population. The more people who finish their education at a high level, it is certain that the human resources of the region are good. Based on the results of the study, the majority of farmers participating in AUTP education were at the Petama Secondary School level, which was 32.00%, while the majority of non-AUTP participant farmers were at the Elementary School level, which was 26.00%. Higher education among AUTP participant farmers was graduated from high school by 30.00%, whereas for farmers not AUTP participants also were at the high school graduation level of 8.00%. Distribution of respondent education level can be seen in the following table.

Table 1. Distribution of respondent education level

Level of Research	AUTP Farmers (people)	Farmers are not AUTP (people)
Elementary School Class 1	2	2
Elementary School Class 2	0	7
Elementary School Class 3	0	9
Elementary School Class 4	0	4
Elementary School Class 5	0	2
Elementary school	0	13
Middle School Class 1	6	4
Middle School Class 2	4	0
Middle School	16	4
High School Class 1	5	0
High School Class 2	2	1
High School	15	4
Amount	50	50

Source: Primary Data Processing (2019)

Activity in the farmer group. The frequency of farmers group meetings can be seen in the following table.

Table 2. Frequency of group meetings

Frequency of meetings	AUTP Farmers (people)	Farmers are not AUTP (people)
1 – 2	0	21
3 – 4	2	26
5 – 6	29	3
7 – 8	16	0
9 – 10	3	0
Amount	50	50

Source: Primary Data Processing (2019)

Based on the results of the study, farmer group meetings in one year starting from 1 time to 9 meetings. The majority of farmers participating in AUTP hold farmer groups meetings in one year as many as 5-6

meetings. Whereas the majority of farmers who are not AOTP participants hold farmer group meetings in one year only for 3-4 meetings, can be seen in Appendix 4 and 5. The frequency of meetings is quite diverse, where there are farmer groups that are less active, so they rarely have meetings. There is also an active farmer group, but its members are indeed rarely attend farmer group meetings. With the communication between members and administrators of the farmer group is an important one to determine the activity of a farmer group.

Land area. The area of land cultivated by farmers can be seen in the following table.

Table 3. The extent of the farm is cultivated

Land area	AOTP Farmers (people)	Farmers are not AOTP (people)
0,00 – 0,50	0	20
0,51 – 1,00	25	30
1,01 – 1,50	9	0
1,51 – 2,00	11	0
Amount	50	50

Source: Primary Data Processing (2019)

The total area of land owned by farmers participating in AOTP is mostly in the group 0.51 - 1.00 ha, which is 50.00%, as well as non-farmers participating in AOTP which is 60.00%. If seen from both of them, it can be seen that the farmers participating in AOTP have more group size than the non-farmers participating in AOTP. Where, the land area of 1.01 - 2.00 ha turned out to only be in the AOTP participant farmers. The farmers who register in the AOTP program are mostly farmers who have an area of land above 0.51 - 2.00 ha, this is because if there is a failure of farmers with large planting areas, capital must be spent for planting large enough, by taking insurance farming they can get insurance that guarantees they can still replant.

Longstanding rice farming experience. The length of experience of farmers' rice farming can be seen in the following table.

Table 4. Long experience of farming farmers

Long time working	AOTP Farmers (people)	Farmers are not AOTP (people)
11 – 20	33	17
21 – 30	16	30
31 – 40	1	3
Amount	50	50

Source: Primary Data Processing (2019)

Based on the results of the study, the highest farmer experience in AOTP participating farmers was between 11-20 at 66.00%, while the experience of farming for non-AOTP farmers was between 21-30 years at 30.00%. With a high level of experience in farming, a farmer can manage or manage his farm well. Besides that, they also have a high level of experience in farming, possibly already understanding how to deal with crop failures or crop damage, so farmers feel no need to follow AOTP. Meanwhile, farmers who participated in the AOTP were more farmers who had experience below those who had experience in farming.

Risk of possible harvest failure. The number of farmers according to farmers' perceptions about the risk of possible crop failure can be seen in the following table.

Table 5. The number of farmers according to farmers' perceptions about the risk of possible crop failure

Percentage of crop harvest	AOTP Farmers (people)	Farmers are not AOTP (people)
1 – 10	1	14
11 – 20	37	35
21 – 30	10	1
31 – 40	2	0
Amount	50	50

Source: Primary Data Processing (2019)

Based on the results of the study, farmers' perceptions about the risk of possible crop failure by the majority of AOTP participants were between 11-20 percent namely 37 people (74.00%), while farmers not participating in the AOTP were also between 11-20 percentie 35 people (70, 00%). Farmers' perceptions about the risk of the possibility of crop failure are highest in AOTP participating farmers are between 31 - 40 percentie 2 people (4.00%), while farmers not participating in AOTP are between 21-30 percentie 1 person (2.00%).

Risk of harvest damage. The number of farmers according to farmers' perceptions about the risk of crop damage can be seen in the following table.

Table 6. The number of farmers according to farmers' perceptions about the risk of crop damage

Persentase gagal panen	AUTP Farmers (people)	Farmers are not AUTP (people)
10 – 20	0	2
21 – 30	21	37
31 – 40	23	11
41 – 50	6	0
Amount	50	50

Source: Primary Data Processing (2019)

Based on the results of the study, farmers' perceptions about the risk of crop damage by the majority of AUTP participating farmers were between 31 - 40 percent namely 23 people (46.00%), while farmers who were not AUTP participants were between 21-30 percent ie 37 people (74.00%). Farmers' perceptions about the risk of crop damage are highest among AUTP participating farmers, between 41 - 50 percent, 6 people (12.00%), while farmers not participating in AUTP are between 31 - 40 percent, 11 people (22.00%).

Rice farming income. Rice farming income is obtained from the reduction of total revenue with explicit costs. The cost per farm can be seen in the following table.

Table 7. Average cost per farm

Cost	Per farmingi	
	AUTP Farmers (people)	Farmers are not AUTP (people)
Explicit cost		
Seed	129,080	63,700
Fertilizer	720,260	402,800
Chalk	252,800	148,000
Pesticide	733,900	470,340
Shrinkage of tools	199,784	151,716
Labor outside the family	2.770,250	1,622,250
Rent agricultural machinery	5.709,400	3,253,100
Implicit cost		
Property tax	12,737	7,134
Internal labor family	815,256	510,503
Interest rate	415,267	243,086
Amount	11,740,734	6,872,699

Source: Primary Data Processing (2019)

The cost per hectare can be seen in the following table.

Table 8. Average cost per hectare

Cost	Per hectare	
	AUTP Farmers (people)	Farmers are not AUTP (people)
Explicit cost		
Seed	101,335	89,389
Fertilizer	551,311	564,620
Chalk	198,461	207,457
Pesticide	576,150	659,294
Shrinkage of tools	134,883	182,893
Labor outside the family	2,174,792	2,273,970
Rent agricultural machinery	4,482.179	4,559.994
Implicit cost		
Property tax	9,999	10.000
Internal labor family	640,019	715.591
Interest rate	325,201	339,651
Amount	9,194,331	9,602,859

Source: Primary Data Processing (2019)

Based on the results of the study, the costs incurred in rice farming by AUTP participating farmers were calculated in per farming is greater than non-AUTP participant farmers. This is shown by the average total cost of farming by farmers participating in AUTP as much as Rp.11,740.734/farming, while farmers not participating in AUTP as much as Rp.6,87,.699/farming. This is due to the average scale of rice farming for AUTP participating farmers per farming area of 1.27 ha, while non-AUTP participant farmers covering 0.71 ha. When viewed in terms of the cost per unit area (per hectare) for AUTP participating farmers is Rp.9,194,331/ha, while non-AUTP farmers are Rp9,602,859/ha. This is because the total area of paddy farming for AUTP participating farmers as respondents is 63.69 ha, while non-AUTP farmers are 35.67 ha.

Seed costs incurred by AUDP participant farmers are greater than non-AUDP participant farmers when calculated per farm or per hectare. This is because the average seed used by AUDP participating farmers is 36.88 kg / farm or 28.95 kg/ha at a price of Rp.3,500/kg/farm or Rp.2,748/kg/ha, so the average seed cost is Rp.129,080/farming or Rp.101,335/ha. While farmers not participating in the AUDP, the average seed used was 18.22 kg/farming or 25.54 kg/ha at a price of Rp.3,500/kg/farming or Rp.4,906/kg/ha, so the average seed cost was Rp.63,770/farming or Rp89,389/ha. This is because the average area of land cultivated by AUDP participating farmers is 1.27, while non-AUDP farmers are 0.71 ha. This causes the cost of seeds spent by farmers participating in AUDP to be greater than farmers not participating in AUDP.

Fertilizer costs incurred by AUDP participant farmers are greater than non-AUDP participant farmers when calculated per farm. However, if calculated per hectare the fertilizer costs incurred by farmers participating in AUDP are smaller compared to farmers not participating in AUDP. This is based on the average fertilizer cost of AUDP participant farmers: Urea as much as 126.20 kg/farming or 99.07 kg/ha multiplied by the price of Rp1,900/kg and Ponska as much as 192.70 kg/farming or 151.28 kg/ha multiplied by the price of Rp.2,400 / kg, so that the average fertilizer cost is Rp.702,260/farm or Rp.551,311/ha. While farmers not participating in AUDP: Urea as much as 75.20 kg/farming or 105.41 kg/ha multiplied by the price of Rp1,900kg and Ponska as much as 108.30 kg farming or 151.81 kgha multiplied by the price of Rp.2,400/kg, so the average fertilizer cost is Rp.402,800/farm or Rp.564,620/ha. The reason is that the scale of farming by AUDP participating farmers is wider compared to non-participant farmers per AUDP. The wider the scale of farming that is attempted, the more fertilizer is needed so that the cost of fertilizer increases.

Likewise, the cost of lime incurred by farmers participating in AUDP is greater than farmers not participating in AUDP if calculated per farm. However, if calculated per hectare the cost of lime incurred by farmers participating in AUDP is smaller compared to farmers not participating in AUDP. This is based on the average lime cost of AUDP participating farmers of 316 kg / farming or 248.08 kg / ha multiplied by the price of Rp.800 / kg, so that the average cost of lime is Rp.252,800 / farm or Rp.198,461 / ha. While farmers not participating in AUDP use 185 kg of lime / farming or 259.32 kg / ha multiplied by the price of Rp.800 / kg, so the average cost of lime is Rp.148,000 / farming or Rp.207,457 / ha. The reason is also based on the scale of farming farmers who participated in AUDP wider than non-farmers participating in AUDP per farm. The wider the scale of farming that is attempted, the more lime is needed so that the cost of lime increases.

Pesticide costs incurred by farmers participating in AUDP are greater than non-farmers participating in AUDP if calculated per farm. However, if calculated per hectare the cost of pesticides incurred by farmers participating in AUDP is smaller compared to farmers not participating in AUDP. This is based on the average pesticide cost of AUDP participant farmers: Reagent of 100 ml / farming or 78.51 ml / ha, Spontaneous as much as 1.22 L / farming or 0.96 L / ha, Gramoxone as much as 1.38 L / farming or 1.08 L / ha, Vertako as much as 0.19 L / farming or 0.15 L / ha and Score as much as 0.13 L / farming or 0.10 L / ha, so that the average cost of pesticides is Rp733,900 / farming or Rp.576,150 / ha. Whereas with non-participant farmers AUDP: Reagent as much as 55 ml / farming or 77.10 ml / ha, Spontaneous as much as 0.78 L / farming or 1.09 L / ha, Gramoxone as much as 0.72 L/farming or 1.01 L/ha, Vertako is 0.13 L/farming or 0.18 L/ha and a Score of 0.09 L/farming or 0.12 L/ha, so that the average cost of pesticides is Rp470,340/farming or Rp.659,294/Ha.

The cost of depreciating equipment incurred by farmers participating in AUDP is greater than farmers not participating in AUDP if calculated per farm. However, if calculated per hectare the cost of tool depreciation incurred by farmers participating in AUDP is smaller compared to farmers not participating in AUDP. This is based on the average cost of depreciating equipment for farmers participating in AUDP by Rp.199,784 / farming or Rp.134,883 / ha, while with non-participant AUDP farmers by Rp.151,716 / farming or Rp.182,893/ha.

Outside the family labor for this research area is on planting activities in organizing rice farming. The labor costs incurred by AUDP participating farmers are greater than non-AUDP participant farmers when calculated per farm or per hectare. This is based on the average labor force outside the farmer's family of AUDP participants totaling 27.70 HOK / farming or 21.75 HOK / ha with an average cost incurred of Rp2,770,250/farming or Rp2,174,792/ha. While farmers not participating in AUDP, the average labor force outside the family is 16.22 HOK / farming or 22.74 HOK / ha with an average cost of Rp.1,622,250/farming or Rp.2,273,970/ha. The reason is because the scale of farming of AUDP participating farmers is wider compared to non-AUDP participating farmers, so the labor costs outside the family of AUDP participating farmers are greater than that of non-AUDP participating farmers.

The rental of agricultural machinery used by farmers in the study area is a hand tractor (land processor) and combine (rice harvesting tool). The cost of leasing a handtractor machine tool for land management incurred by AUDP participating farmers and not AUDP participants is calculated based on the scale of farming farmed by farmers. The wider the scale of farming that is worked on, the greater the cost of the rental equipment incurred. Likewise, the costs of renting machine tools for rice harvest incurred by AUDP participant farmers and not AUDP participants are calculated based on the production produced from rice farming by farmers. The more production results produced, the greater the cost of the rental equipment incurred. Based on the calculation of

the cost of leasing agricultural machinery by AOTP participating farmers amounting to Rp5,709,400/farming or Rp.4,482,179/ha, while farmers participating in the AOTP amounting to Rp.3,253,100/farming or Rp.4,559,994/ha.

Land and building tax costs incurred by farmers participating in AOTP farmers are greater than non-AOTP farmers if calculated per farm. However, if calculated per hectare, the land and building tax costs for farmers not AOTP participants are higher. This is based on the average land and building tax costs for AOTP participating farmers of Rp.12,737/farm or Rp9,999/ha, while non-AOTP farmer farmers are Rp.7,134/farming or Rp.10,000/ha. The reason is because the farmers participating in AOTP have more land area for their farming land compared to farmers who are not participants of AOTP.

Labor in the family for this research area is the activities of nurseries, fertilizing, administering drugs and transporting rice farming. The labor costs incurred by farmers participating in AOTP are greater than non-farmers participating in AOTP if calculated per farm. However, if calculated per hectare, the labor costs in the work of farmers who are not AOTP participants are higher. This is based on the average workforce in AOTP participating farmer families of 10.77 HOK / farming or 8.45 HOK / ha with an average cost incurred of Rp 815.256/ farming or Rp. 640.019/ha. While farmers who are not AOTP participants, the average labor in the family is 6.78 HOK / farming or 9.50 HOK / ha with an average cost of Rp10,503/farming or Rp715,591/ha. The reason is because the scale of farming of AOTP participant farmers is wider compared to non-AOTP participant farmers.

Interest costs incurred by farmers participating in AOTP are greater than non-farmers participating in AOTP if calculated per farm. However, if calculated per hectare, the land and building tax costs for farmers not AOTP participants are higher. This is the average cost of farmer farmer participant AOTP interest rates of Rp415,267/farm or Rp.325,201/ha, while non-AOTP farmer farmers are Rp243,086 / farm or Rp.339,651/ha. The reason is because the total cost per farm that is incurred by farmers participating in AOTP before added to the cost of interest is already greater than non-farm participants. However, if the calculation per hectare is the total cost before it is added to the lower interest rate of the participating AOTP farmers.

Revenue is the product of the amount of production produced for sale and the selling price of production. Farmer acceptance can be seen in the following table.

Table 9. Average farmer acceptance

Acceptance	AOTP Farmers (people)	Farmers are not AOTP (people)
Per Farming	26,581,980	14,699,140
Per Ha	20,868,252	20,604,345

Source: Primary Data Processing (2019)

Based on the results of the study, the average rice farm receipts obtained by farmers participating in AOTP were higher compared to farmers who were not participants of AOTP if calculated per farm or per hectare. This is based on the average production yield of AOTP farmer farmers participating in 6,040 kg / farming or 4,742 kg / ha with a selling price of Rp4,424 / kg/farming or Rp.3,473/kg/ha, so the average income of Rp. 26,581,980 / farming or Rp.20,869,252/ha. While farmers not participating in AOTP, the average production yield of paddy farming from non-participant farmers was 3,304 kg / farming or 4,632 kg / ha with a selling price of Rp 4,452 / kg / farming or Rp6,241/kg/ha, so the average revenue was Rp14,699,140/farming or Rp20,604,345/ha.

Farmer income is the result of total revenue minus explicit costs. Farmer's income can be seen in the following table.

Table 10. Average farmer revenue

Revenue	AOTP Farmers (people)	Farmers are not AOTP (people)
Per Farming	16,084,506	8,587,164
Per Ha	12,649,141	12,066,729

Source: Primary Data Processing (2019)

Based on the results of the study, the average rice farm receipts obtained by farmers participating in AOTP were higher compared to farmers who were not participants of AOTP if calculated per farm or per hectare. This is based on the average farmer's acceptance of AOTP participants amounting to Rp26.581.980/farming or Rp20,869,252/ha with an average explicit cost of Rp10,497,474/farming or Rp8,869,130/ha, so that the average income obtained by farmers participating in AOTP in the amount of Rp.16,084,506/farm or Rp.12,649,141/ha. While the average farmer acceptance of AOTP participants was Rp.14,699,140/farming or Rp.20,604,345/ha with an explicit average cost of Rp.6,111,976/farming or Rp8.537.616/ha, so that the average income earned by farmers non-AOTP participants amounting to Rp8,587,164/farming or Rp12,066,729/ha

Farmers' Response to the Rice Farmer Business Insurance Program (AUTP)

Farmer respondents to the AUTP program can be seen in the following table.

Table 11. Farmer respondents to the AUTP program

Farmer response	AUTP Farmers (people)	Farmers are not AUTP (people)
Very positive	0	0
Positive	50	0
Negative	0	8
Very negative	0	42
Amount	50	50

Source: Primary Data Processing (2019)

The purpose of agricultural insurance is to protect farmers from the risk of crop failure. Farmers will be compensated if the harvest fails, so they can continue to cultivate in a sustainable manner. Thus, agricultural insurance provides a real contribution to the national food security program. The purpose of the program has been well received by rice farmers in Kusan Hilir District, Tanah Bumbu Regency. Most farmers already know about AUTP both the requirements, procedures and procedures for claiming an average of 48-55 percent of farmers who already know about AUTP.

For the socialization carried out by agricultural extension workers, most of those who participated in the AUTP responded positively because they were active in the farmer groups, while those who did not participate in the AUTP program were mostly unaware because the socialization was only done at meetings in the farmer groups. in the farmer group. For convenience in obtaining information, requirements, claims and procedures following the AUTP, there is already a range of 44-47 percent, only a small proportion respond negatively to this because the program has been facilitated by the agriculture instructor, and the head of the farmer group so that farmers are not confused in managing the AUTP.

Untuk manfaat yang dirasakan serta minat untuk mengikuti program AUTP secara berkelanjutan sebagian besar petani menyatakan program ini sangat bermanfaat untuk memberikan perlindungan bagi petani atas resiko gagal panen. Respon tersebut memberikan bukti bahwa petani sangat memerlukan program AUTP tersebut.

Factors Affecting Rice Farmers' Participation in the Rice Farming Insurance Program (AUTP)

From the results of calculations using the SPSS 21 application, obtained the equation of the use of rice farmers' participation in the Rice Farmer Business Insurance Program (AUTP) in Tanah Bumbu Regency, namely:

$$\text{Logit } [P] = \ln \left[\frac{P}{1-P} \right] = -21,328 + 0,134X1 + 0,482X2^{**} - 0,223X3^{*} + 0,239X4 + 0,273X5^{*} + 0,051X6^{*} + 0,595X7^{*}$$

Note: * = significantly to a 5%

** = significantly to a 10%

The Y value or the dependent factor in the logit model above is showing AUTP participant farmers and non-AUTP participant farmers, where 0 = farmers not AUTP participants and 1 = AUTP participant farmers in the administration of rice farming. The number of samples in this study were 100 people consisting of 50 farmers participating in AUTP and 50 non-participating farmers in AUTP.

Model goodness test. Before the equation model above is interpreted on the coefficients used, then the model is first tested for the goodness of the model to determine whether the model used is fit with its empirical data. Based on the results of the analysis with the Omnibus Tests of Model Coefficients in the G test of 56.413 and the P value is smaller than $\alpha = 5\%$ (0.050), 0.000 (Table 12). This shows that the independent factors together have a significant effect.

Furthermore, to determine the ability of the dependent factors that can be explained by independent factors, the Cox & Snell R Square and Nagelkerke R Square values are used. Based on the test results show that the value of Nagelkerke R Square is 0.531 (Table 12). This shows that the participation of rice farmers in the Rice Farmers Business Insurance Program (AUTP) 53.1% is determined by the independent variables in the function, while the remaining 46.9% is determined by factors outside the model or not included in the function model.

Table 12. Results of the logit analysis of farmers' participation in the Rice Farmer Business Insurance Program (AUTP) in Kusan Hilir District, Tanah Bumbu Regency

Predictor	Coef	SE Coef	Z	P	Oods Ratio
Constant	- 21,328	10,891	5,048	0,027	0,000
Length of formal education (years)	0,134	0,368	0,135	0,711	1,132
Active in farmer groups (number of times)	0,482	0,251	3,602	0,057**	1,619
Land area cultivated (Ha)	-0,223	0,115	3,943	0,049*	0,921

Rice farming experience (years)	0,239	0,186	1,589 0,256	1,273
Income of rice farming (Rp)	0,273	0,117	4,521 0,037*	1,258
Risk of possible crop failure (%)	0,051	0,032	4,902 0,034*	1,081
Risk of crop damage (%)	0,595	0,257	5,749 0,018*	1,643

Simultaneous Test Criteria (Model): G=45,533, DF=7, P-Value=0,000; Nagelkerke R Square=0,580

Source: Primary Data processing denganaplikasi SPSS (2019)

Partial Test.Based on partial testing (Wald test) shows that the factors that significantly influence the participation of rice farmers to the Rice Farmer Business Insurance Program (AUTP) in KusanHilir District Tanah Bumbu Regency are the factors of land area cultivated (X3), income from rice farming (X5), the risk of possible crop failure (X6) and the risk of crop damage (X7) to $\alpha = 5\%$. While the activity factor in the farmer group (X2) has a significant effect up to $\alpha = 10\%$ (Table 12). Whereas the factors that did not significantly influence the participation of rice farmers in the AUTP Program were the factors of length of formal education (X1) and experience of rice farming (X4). Details about each factor can be described as follows:

Long formal education.The old factor of formal education of farmers has a positive but not significant coefficient. Judging from the P value greater than $\alpha = 5\%$ (0.050) that is 0.711, so the null hypothesis (H0) is accepted and the alternative hypothesis (H1) is rejected. This shows that in order for farmers to participate in the Rice Farmer Business Insurance Program (AUTP) to increase, there is no need for a high level of education. It also provides an understanding that the efforts made to increase the number of farmers participating in the Paddy Farm Business Insurance Program (AUTP) are not from the tertiary level.

Activity in the farmer group. The activeness factor in the farmer group has a positive coefficient with an odds ratio of 1.619. Judging from the P value smaller than $\alpha = 10\%$ (0.10), that is 0.057, so the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of positive direction coefficient signs and odds ratios means that if the activity in the farmer groups increases by one frequency unit several times / year, the opportunity for rice farmers to participate in the Rice Farmers Business Insurance Program (AUTP) was 1,619 times. The more active farmers participate in farmer groups meetings, the more information they get related to the Rice Farmers Business Insurance Program (AUTP), so that they will be able to understand the benefits to be gained if they join the program.

Land area cultivated. The area of land cultivated has a negative coefficient with an odds ratio of 0.921. Judging from the P value smaller than $\alpha = 5\%$ (0.05), that is 0.049, so the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of negative direction coefficient signs and odds ratios means that if the area of land cultivated increases by one hectare, the opportunity for rice farmers to participate in the Paddy Farmers Business Insurance Program (AUTP) will decrease by 0.921 times. This is because farmers who have a narrower land area will feel the need to ensure that they do not suffer losses from their farming as a result of damage to the rice farming.

Rice farming experience. Factors of experience of farmers' rice farming have a positive coefficient but not significant. Judging from the P value greater than $\alpha = 5\%$ (0.050), that is 0.256, so the null hypothesis (H0) is accepted and the alternative hypothesis (H1) is rejected. This shows that for farmers participating in the Rice Farmers Business Insurance Program (AUTP) to increase, there is no need for high rice farming experience. It also provides an understanding that the efforts made to increase the number of farmers participating in the Rice Farming Business Insurance Program (AUTP) are not from the experience of high rice farming. Farmers who have more experience in farming might understand to anticipate crop failures and farmers are able to cope in the event of crop failure or damage with the experience they have so farmers feel no need to participate in agricultural insurance. So with these conditions it is natural that the experience of rice farming does not affect the participation of farmers in the AUTP program.

Rice farming income. The factor of rice farming income has a positive coefficient with an odds ratio of 1.258. Judging from the P value smaller than $\alpha = 5\%$ (0.05), that is 0.037, so the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of positive direction coefficient signs and odds ratios means that if farmers 'rice farming income increases by one unit of rupiah, the chances of farmers participating in rice farmers to the Farmers' Business Insurance Program (AUTP) to better increase or be 1.258 times earlier. The higher the level of income of farmers in rice farming, the greater the sense of desire to secure farm income, so it does not cause substantial losses due to damage to rice harvest.

Risk of possible harvest failure. Risk factors for possible crop failure have a positive coefficient with an odds ratio of 1.081. Judging from the P value smaller than $\alpha = 5\%$ (0.05), that is 0.034, so the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of positive direction coefficient signs and odds ratios means that if the risk of possible crop failure increases by one percentage unit the chances of farmers participating in rice farmers to the Rice Farmers Business Insurance Program (AUTP) to better increase or greater than 1.081 times the original farmers who do not take part in the Paddy Farmer Business Insurance Program (AUTP).

Risk of harvest damage. Risk factors for crop damage have a positive coefficient with an odds ratio of 1.643. Judging from the P value less than $\alpha = 5\%$ (0.05), that is 0.018, so the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. The combination of positive direction coefficient signs and odds ratios means that if the risk of crop damage increases by one unit percentage, the chances of farmers participating in rice farmers to the Rice Farmers Business Insurance Program (AOTP) to better increase or greater 1.643 times from farmers who do not participate in the Paddy Farm Business Insurance Program (AOTP).

IV. Conclusions And Suggestions

Conclusion

The conclusions obtained based on the research that has been done is as beriku:

1. Characteristics of rice farming households participating in the Rice Farming Business Insurance Program (AOTP) in Tanah Bumbu Regency:
 - a. The majority of formal education levels of farmers participating in AOTP are Junior High Schools, while farmers not participating in AOTP are Elementary Schools.
 - b. The majority of farmers in the AOTP farmer groups participating in the majority of AOTP ranged between 5-6 times the banquet, while pertani farmers who did not participate in the AOTP ranged 3-4 times a year.
 - c. The area of land cultivated by farmers who participated in the AOTP and not the majority of AOTP participants was 0.51 - 1.00 ha.
 - d. The majority of experience of paddy farming experience by AOTP farmers ranged from 11 - 20 years, while pertani farmers who did not participate in AOTP ranged from 21 - 30 years.
 - e. e. The risk of possible crop failures by AOTP participant farmers and not majority AOTP participants ranged between 11-20 percent.
 - f. The risk of damage to the harvest of majority AOTP participant farmers ranged from 31 - 40 percent, while pertani farmers not AOTP participants ranged between 21 - 30 percent.
 - g. The average farm income of AOTP participating farmer farmers is Rp 16,084,506/farming or Rp12,649,141/ha, while non-AOTP participant farmers are Rp8,587,164/ farming or Rp12,066,729ha.
2. The number of farmers who responded positively to the AOTP Program was 50 people or 100.00% of farmers who participated in the AOTP program. While the remaining 8 people (16.00%) who responded negatively and 42 people (84.00%) who responded very negatively from farmers who were not AOTP participants.
3. Factors that influence the participation of farmers in the Rice Farming Business Insurance Program (AOTP) in Tanah Bumbu Regency are the activeness factors in farmer groups, the area of land cultivated, the income of rice farming, the risk of possible crop failure and the risk of crop damage.

Suggestion

Based on the conclusions obtained, the suggestions that can be given are as follows:

1. Efforts to improve the quality of education need to be done by attending training and outreach from non-formal education activities for farmers who are already non-productive, in order to increase knowledge.
2. The level of attendance of farmer group members needs to be increased to be more active at farmer group meetings.
3. The need to reduce the level of risk of possible crop failure or crop damage, in order to increase farmers' income earned

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