



## **Farmer's Response to the Rice Farming Business Insurance Program (AUTP) in Kramatwatu District**

**Mohamad Arief Setiawan<sup>1,3\*</sup> and Kalfin<sup>2</sup>**

<sup>1</sup> *Department of Agribusiness, Faculty of Agriculture, University of Sultan Ageng Tirtayasa, Indonesia*

<sup>2</sup> *Doctor Program of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia*

<sup>3</sup> *Faculty of Agriculture, Universitas Padjadjaran, Indonesia*

*\*Corresponding author email: ariefs868@gmail.com*

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### **Abstract**

The agricultural sector is one attempt most vulnerable to the negative effects of climate change. Behavior extreme climate led not deficient or damage to the irrigation network, the farming, and agricultural infrastructure. To minimize risk losses from a threat that happened on agriculture. One alternative instrument risk management worth considering is the presence of the agricultural insurance. The purpose of this research is studying a sort of descriptive the program, identify, analyze and described a characteristic response of farmers on the insurance program rice farming (AUTP) in Kramatwatu district. The method used in research is the method survey; the location of research is purposive on the basis that Kramatwatu district is district that members of the farmers group have interest to the participation of the highest AUTP program. An analysis of the data used was analysis descriptive is used to give the percentage identification elements communication and the effectiveness of communication. While relations communication element to analyze the effectiveness of communication producers and farmers in the activities of the barns using analysis inferential through correlation test rank spearman. Based on the results of the study it can be seen that the cognitive response category agreed (46%), affective response category agreed (26%), conative response categories agreed (23%), and The results of this study indicate that of all factors associated with the level of farmer participation the AUTP program in Kramatwatu sub-district has an average valuation that includes the income and education factors have a weak but relative relationship, then the age factor and the area of land do not give any relation to the farmer's participation in the AUTP program.

**Keywords:** AUTP, agricultural sector, Kramatwatu District, insurance.

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### **1. Introduction**

Indonesia as the largest archipelagic country in the world, with 80,000 kilometers of coastline and more than 17,000 islands, is in the Pacific Ring of Fire which makes Indonesia vulnerable to natural disasters such as volcanic eruptions, earthquakes, tsunamis and landslides (Setiawan et al., 2021; Kalfin et al., 2020a; Kalfin et al., 2020b). This geographical position also makes Indonesia vulnerable to the negative impacts of climate change, most of which are already being felt, such as prolonged dry seasons, floods and extreme weather (kalfin et al., 2021a; Kalfin et al., 2021b). This has a negative impact on the health and welfare of the population, and threatens the biodiversity and stability of the Indonesian economy, as well as for the agricultural sector which is highly dependent on the climate and conditions of natural resources.

The agricultural sector is one of the most vulnerable businesses to the negative impacts of climate change. The increasing incidence and intensity of floods or droughts causes an escalation of crop damage. At the same time, extreme climate behavior also results in suboptimal or damaged irrigation networks, farming roads, and other agricultural infrastructure. So in general, the risk and uncertainty in farming increases and so far the farmers bear the risk themselves. The implication is that the future of national food security faces a more bleak situation. The agricultural sector is one of the most vulnerable businesses to the negative impacts of climate change. The increasing incidence and intensity of floods or droughts causes an escalation of crop damage. At the same time, extreme climate behavior also results in suboptimal or damaged irrigation networks, farming roads, and other agricultural infrastructure. So in general, the risk and uncertainty in farming increases and so far the farmers bear the risk themselves. The implication is that the future of national food security faces a more bleak situation.

In an effort to obtain independence and equitable welfare in the agricultural sector, it is necessary to have systematic and institutional efforts to minimize the risk of losses due to threats that occur in the agricultural sector. One alternative risk management instrument that deserves consideration is the existence of agricultural insurance,

especially to cope with losses due to global climate change. Insurance is offered as one of the funding schemes to share the risks experienced by farmers such as crop failure. Agricultural insurance relates to farming financing with third parties (private insurance companies or government agencies) with a certain amount of premium payments (World Bank 2008 in Pasaribu 2010).

Agricultural insurance is a very good effort made by the government in providing protection to farmers. This effort is intended so that farmers, who have been mostly poor, do not become poorer if they experience crop failure. In addition, with the existence of agricultural insurance, it is hoped that the agricultural sector will become more attractive so that it can reduce/hold the number of farmers who change professions while reducing the conversion of agricultural land so that it is hoped that in the next few years Indonesia can become a food-sovereign country, food security, and achieve self-sufficiency in food with prosperous and prosperous farmers.

On the other hand, the world insurance market shows very promising developments. Direct premiums for agricultural insurance have grown rapidly in recent years, from US\$ 8 billion in 2005 to around US\$ 18.5 billion in 2008. In Banten province, agricultural insurance has been running for approximately 2 years, in 2015 which then the Banten Province Agriculture and Livestock Service has allocated 29,000 hectares of agricultural land in Banten to participate in the AUP in four agricultural centers, namely Lebak Regency, Pandeglang Regency, Serang Regency and Tangerang Regency. As a province that contributes the top ten national rice needs, thousands of rice farmers in Banten participate in AUP. Over time, the area and number of farmers who become insurance participants is increasing. Moreover, in 2017, the Indonesian Ministry of Agriculture has targeted the insured rice planting area to reach 1.5 million hectares.

However, after almost two years running, AUP has not been able to boost the welfare of farmers. At the start of the agricultural insurance trial in 2015, the Farmer's Exchange Rate (NTP) of Banten had increased from January of 105.42 to 107.53 in November. However, after that, Banten's NTP plunged to 98.69 in April 2017. An NTP figure below 100 reveals that farmers' income from farming results is lower than farmers' expenditures for production and household costs. One of the reasons why AUP has not been able to increase the NTP or improve the welfare of farmers is, among other things, because the provisions for the total planting and the area of damage to compensation for crop failure are still too high, reaching three-fourths of the planted area. So, for example, if a farmer experiences crop failure of half the planted area or less, the farmer will not get an insurance claim.

In addition, agricultural insurance participants are also still very limited, namely only intended for farmers who grow rice. In fact, other crops that have a higher risk of crop failure also need a guarantee for this crop failure, such as corn, soybean and vegetable farmers. For this reason, it should be the main concern of the government, that agricultural insurance should not be oriented solely to company profits. Agricultural insurance should be intended for farmers so that it is easy to get guarantees for crop failure. This is where the crucial role of the state company PT. Jasindo with the government (Banten Province Agriculture Office 2016).

Agricultural insurance is crucial at this time, because at this time agricultural insurance is a program from the Ministry of Agriculture in how to improve the welfare of farmers, especially in this research insurance is carried out in Kramatwatu District. The result of the implementation of the AUP agricultural insurance program is that 12 farmer groups in five villages have participated in this insurance program and have been running for almost two years. Based on the description of the problems and potentials above, this study is interested in discussing how the relationship between the characteristics of farmers and the response of farmers to the AUP Rice Farming Insurance program in Kramatwatu District. Based on the results of this study, it is expected to be the result of an evaluation for the government in the implementation of the agricultural insurance program that has been implemented. From the evaluation results, it can be an improvement and development of a more optimal and effective agricultural insurance program.

## **2. Materials and Methods**

### **2.1. Materials**

The type of research used is descriptive analysis using survey methods. This research was conducted in Kramatwatu District, Serang Regency. The location selection is done intentionally (purposely). Sources of data used in this study are primary data obtained from structured interviews, as well as secondary data obtained from related agencies and literature studies from research that has been carried out.

The research instrument used by the researcher is using a questionnaire or questionnaire. The completed and collected questionnaires will be measured using a Likers Scale. The data that has been collected and filled in from all respondents will be tabulated using Microsoft Excel and SPSS for Windows Version 20.00 programs. The instrument items in the form of questions and statements will be described using the following Likers Scale measurements, as given in Table 1.

**Table 1.** Research Likers Scale

Statement	Score
Strongly agree	5
Agree	4
Just Agree	3
Do not agree	2
Strongly Disagree	1

The sampling technique used in this study is Cluster Random Sampling; Cluster Random Sampling is a technique for selecting a sample from small unit groups. The population of the cluster is a subpopulation of the total population. Cluster grouping produces heterogeneous elementary units as well as the population itself (Nazir, 1988). The population in this study are farmers who are registered as administrators and members of farmer groups in Kramatwatu District, totaling 50 respondents taken from 5 villages, each of which is taken 10 respondents. In this study using a lottery technique by writing the names of farmers as the population into each paper that has been prepared, then the paper is rolled up and put into a glass which is used as a drawing medium, the name that comes out first after the draw is taken as the first sample and so on until it reaches the required amount.

## 2.2. Methods

### Validity test

The validity test is used to determine whether the questionnaire compiled is valid or valid, it is necessary to test it with a correlation test between the score (value) of each question item and the total score of the questionnaire. For questions that are not valid, they must be discarded or not used as a question instrument. The conditions used are Pearson correlation Sig. (2 tailed) > r table.

### Reliability Test

The instrument reliability test is carried out with the aim of knowing the consistency of the instrument as a measuring instrument, so that the results of a measurement can be trusted. The measurement results can be trusted only if in several times the implementation of measurements on the same group of subjects (homogeneous) relatively the same results are obtained, as long as the aspects measured in the subject have not changed. In this case, relatively the same means that there is tolerance for small differences between the results of several measurements. The reliability test was carried out using the Croanbach's Alpha formula. The criteria for the value of Croanbach's Alpha is if the value of Croanbach's Alpha > r table is obtained. The level of reliability is measured based on an alpha scale of 0 to 1.

### Data Analysis

#### a) Analysis of Farmers' Responses in the Implementation of the Rice Farming Insurance Program (AUTP).

The data analysis method used to determine the implementation of the Rice Farming Insurance program is measured by the size of the answers given by the respondents (AUTP). According to Iwan 2007, the data from the questionnaire were tabulated with scores from each aspect that became an indicator and then added up and averaged for each respondent. So the following formula is used:

$$\text{Interval Width} = \frac{\sum \text{highest score} - \sum \text{lowest score}}{\sum \text{class score}} \quad (1)$$

#### b) Analysis of Characteristics Associated with Farmer Responses.

Data analysis for factors related to farmer response was used Spearman  $r_s$  rank correlation test and supported by using Microsoft Excel 2010 and SPSS for windows version 20.00 applications.

$$r_s = 1 - \frac{6 \sum D_1^2}{n(n^2 - 1)} \quad (2)$$

where  $r_s$ : Spearman rank correlation coefficient;  $n$ : number of sample sizes; and  $\sum D_1^2$ : the sum of the squares of the difference between the rank of the variable  $x$  and the rank of the variable  $y$

For to test the significance level of  $r_s$  used t-test with the formula:

$$t_0 = r_s \sqrt{\frac{n-2}{1-r_s^2}} \quad (3)$$

wher  $t_0$ : Distribution t;  $r_s$ : Spearman Rank correlation value; and  $n$ : Number of paired data observations.

The criteria for drawing conclusions are made by comparing the calculated statistical values with the table values. Reject  $H_0$  if the calculated statistical value is greater than the table statistical value and accept  $H_0$  if the calculated statistical value is less than the table statistical value.

### 3. Results and Discussion

Kramatwatu District is one of the sub-districts in Serang Regency, Banten Province. Kramatwatu District is divided into 15 villages, with the center of government or capital located in Kramatwatu Village. There are 9 villages with urban status and the remaining 6 villages with rural status. Kramatwatu District, which consists of 15 villages, has a total of 183 village and sub-district officials. The sub-district office consists of the Camat, the Camat Secretary, Section Heads and Staff. Meanwhile, each village consists of the Village Head, Village Secretary, Section Head and Staff/Head of Affairs.

#### 3.1. Tabulation of Farmer Response Data to the Rice Paddy Farming Insurance Program (AUTP)

Data tabulation is the result of respondents' questionnaires that have been answered and presented in tabular form. The scale in measuring respondents' answers is obtained from the width of the interval for each indicator:

$$\text{Lebar Interval} = \frac{45 - 9}{5} = 7.2$$

Then the width of the interval for tabulation of farmer response data in the Rice Farming Business Insurance (AUTP) program is obtained at 7.2. Table 2, below shows the knowledge (cognitive) response to the AUTO program.

**Table 2.** Knowledge Response (cognitive) in the AUTP Program

No	Score Category	Score	Score (People)	Percentage (%)
1	Strongly Disagree	1	0	0
2	Do not agree	2	0	0
3	Just Agree	3	7	14
4	Agree	4	23	46
5	Strongly agree	5	10	40
<b>Amount</b>			50	100

Based on the results in Table 2, it can be seen that the cognitive responses of respondent farmers to the AUTP program are mostly in the good/agree category. The value of knowledge in the AUTP program activities of farmer groups in Kramatwatu District can be obtained from the total value of the respondents' answers answered by the respondents and then tabulated into a measurement scale. Table 3 below shows the attitude (affective) responses in the AUTO program.

**Table 3.** Attitude (Affective) Responses in the AUTP Program

No	Score Category	Score	Score (People)	Percentage (%)
1	Strongly Disagree	1	0	0
2	Do not agree	2	0	0
3	Just Agree	3	7	14
4	Agree	4	26	52
5	Strongly agree	5	17	34
<b>Amount</b>			50	100

Based on the results in Table 3, it can be seen that the affective responses or attitudes of respondent farmers towards the AUTP program are mostly in the good/agree category. In the category quite agree with the percentage of 14% a total of 7 people. With a percentage of 52% in the agree category as many as 26 people. In the category of strongly agree there are 17 members with a percentage of 34%. Table 4 below is the response skills (cognitive) in the AUTO program.

**Table 4.** Response Skills (Cognitive) in the AUTP Program

No	Score Category	Score	Score (People)	Percentage (%)
1	Strongly Disagree	1	0	0
2	Do not agree	2	0	0
3	Just Agree	3	6	12
4	Agree	4	23	46
5	Strongly agree	5	21	42
<b>Amount</b>			50	100

Based on Table 4, it can be seen that the conative responses of respondent farmers in the AUTP program activities mostly agree. A total of 6 people who chose the category quite agreed with a percentage of 12%. A total of 23 farmer groups who have an assessment in the agree category and can be given a percentage of 46% and the last category strongly agree as many as 21 people who give an assessment with a percentage of 42%.

### 3.2. The Relationship between Farmer Characteristics and Farmer Responses to the Rice Farming Business Insurance Program (AUTP)

To see how big the level of relationship between farmer characteristics and farmer response to the AUTP program, it will be tested with Spearman rank correlation. To calculate the Spearman rank correlation using SPSS computer program. The characteristics of the farmers studied included: age, education, income, and area, the correlations are presented in Table 5.

Table 5. Correlation coefficient

No.	Variable	Sig. (2-Tailed)	Correlation coefficient
1.	Age	0,405	0,120
2.	Education	0,038	- 0,294*
3.	Land area	0,179	-0,193
4.	Income	0,004	-0,396**

### 3.3. Relationship of Age with Farmer's Response

Based on the results of the Spearman rank correlation test, it is known that the number of respondents (N) studied were 50 people. In the table above, we know that the relationship between the characteristics of respondents based on age and farmer responses has a correlation coefficient value of 0.405 with a sig value. (2-Tailed) of 0.405. sig value. (2-Tailed) is greater than the critical limit = 0.05, it means that there is no significant relationship between the characteristics of respondents based on age and farmer responses.

### 3.4. Relationship between Education and Farmer Response

The length of education has a sign value. (2-tailed) of 0.038. This value is smaller than the critical limit = 0.05, it means that there is a significant relationship between the length of education and the response of farmers in AUTP. As for the correlation coefficient, the value is -0.294. The correlation value lies between 0.21 rs 0.40. This shows that there is a strong relationship between the length of education and the response of farmers in AUTP.

### 3.5. Relationship between land area and farmer response

Based on the table, it is known that the relationship between the characteristics of respondents based on land area and farmer responses has a correlation coefficient value of -0.193 with a sig. (2-Tailed) of 0.179. sig value. (2-Tailed) is greater than the critical limit = 0.05, it means that there is no significant relationship between the characteristics of respondents based on land area with farmer responses

### 3.6. Income Relationship with Farmer Response

From the table above, it is known that the correlation coefficient value is -0396. The correlation value lies between 0.21 rs 0.40. This shows that there is a very strong relationship between income and farmer response in AUTP. The negative sign on the correlation coefficient indicates that there is a non-unidirectional relationship between income and farmer response, meaning that if the income of farmers is higher, the response of farmers to the AUTP program will be weak.

## 4. Conclusion

Based on the results of the study, it can be concluded that the implementation of the agricultural insurance program in Gapoktan in Kramatwatu District by collecting data both primary and secondary and also by conducting field research, the authors can find out that the program is actually implemented in accordance with the procedures laid down. has been planned. And the program can increase farmers' income. making it easier for farmers to increase capital and increase productivity of rice farming. Although farmers' incomes decrease when there is a crop failure, the farmers do not go bankrupt, insurance companies provide compensation when farmers experience crop failures which can be used for capital in replanting rice crops, so that farmers' incomes can be more stable. Farmers' responses to the AUTP program with Cognitive (46%), Affective (52%), and Conative (23%) responses were included in the agree category. The results of this study indicate that of all the factors associated with the level of farmer participation in the AUTP program in Kramatwatu District, the average assessment varies, including income and education factors have a weak relationship, then the age factor and land area have no relationship at all. participation of farmers in the AUTP program.

## References

- Asuransi Binagriya. 2011. Fungsi dan Tujuan Asuransi. Diakses 21 Maret 2013. <http://asuransibinagriya.blogspot.com/2011/11/disamping-sebagai-bentuk-pengendalian.html>
- Direktorat Pembiayaan Pertanian. Direktorat Jenderal Prasarana dan Sarana Pertanian, Kementerian Pertanian. Jakarta
- Hartono S. R. 1985. *Asuransi dan Hukum Asuransi di Indonesia*. Semarang (ID): Institut Keguruan dan Ilmu Pengetahuan Semarang Press.
- Hasan M. I. 2002. *Pokok-pokok Materi Metodologi Penelitian dan Aplikasinya*. Bogor (ID): Ghalia Indonesia.
- Kalfin, Sukono, Supian S, and Mamat, M. (2021a). Mitigation and models for determining premiums for natural disaster insurance due to excessive rainfall. In *Journal of Physics: Conference Series*, 1722(1), p. 012058. IOP Publishing.
- Kalfin, Sukono, Supian S, Mamat M, and Bon A T. (2020a). Model for Determining Natural Disaster Insurance Premiums in Indonesia Using the Black Scholes Method. *Proceedings of the International Conference on Industrial Engineering and Operations Management* Detroit Michigan, USA, pp. 2376–2385.
- Kalfin, Sukono, Supian, S., Mamat, M., Bon, A.T. (2020b). A review mitigation efforts and natural disaster insurance schemes in indonesia. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Harare, Zimbabwe, pp. 1825–1835.
- Kalfin, Sukono, Supian, S., Mamat, M., Muljana, F., & Bon, A. T. (2021b). Analysis of Agropolitan Area Planning Based on Natural Disaster Mitigation in West Muna Regency, Southeast Sulawesi, Indonesia. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Sao Paulo, Brazil, pp. 3592– 3601.
- Kementerian Perencanaan Pembangunan Nasional. 2013. *Rencana Pembangunan Jangka Menengah Nasional (RPJMN) Bidang Pangan dan Pertanian 2015-2019*. Jakarta (ID) : Direktorat Pangan dan Pertanian
- Kementerian Pertanian. (2016). Pedoman Bantuan Premi Asuransi Usahatani Padi.
- Kementerian Pertanian. 2011. *Draf Pedoman Umum Asuransi Komoditas Pertanian*. Jakarta (ID): Direktorat Pembiayaan Pertanian.
- Mutaqin, A. K., Kudus, A., Karyana, Y. 2015. Metode Parametrik untuk Menghitung Premi Program Asuransi Usaha Tani Padi di Indonesia. *Prosiding SnaPP 2015 Sains dan Teknologi*. Universitas Islam Bandung, 15-23.
- Nurmanaf A. R., Sumaryanto, S.Wahyuni, E. Ariningsih, Y. Supriyatna. 2007. *Analisis Kelayakan dan Perspektif Pengembangan Asuransi Pertanian pada Usahatani Padi dan Sapi Potong*. Bogor (ID): Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian (Kementerian Pertanian).
- Pasaribu M. S., I. S. Agung, N. K. Agustin, E. M. Lokollo, H. Tarigan, Y. Supriyatna. 2010. *Laporan Akhir Penelitian : Pengembangan Asuransi Usahatani Padi untuk Menanggulangi Risiko Kerugian 75% Akibat Banjir, Kekeringan, dan Hama Penyakit*. Bogor (ID): Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian (Kementerian Pertanian).
- Pasaribu. M. et al (2016). *Penerapan Asuransi Pertanian di Indonesia*. <http://www.litbang.pertanian.go.id/buku/reformasi-kebijakan-menuju/BAB-IV-9.pdf>. Diakses pada 3 Mart 2016
- Setiawan, M. A., Noor, T.I., Sulistyowati, L., and Yudha, E. P. (2021). Mapping of Food Security Based on Natural Disaster Mitigation in Serang Regency, Banten Province, Indonesia. *Psychology and Education Journal*, 58(4), 911-924.
- Sugiyono. 2007. *Metode Penelitian Bisnis*. Alfabeta. Bandung.
- Sulistyo AS. (2011). *Respon petani padi dalam penggunaan petroganik di Kec. Blora Kab. Blora*. Skripsi Fakultas Pertanian universitas Sebelas Maret Surakarta.
- Supartoyo, Y. H., Kasmianti. 2013. *Asuransi Pertanian sebagai Alternatif Mengatasi Risiko Usaha Tani Menuju Pertanian Berkelanjutan: Tinjauan Konseptual*. [https://www.academia.edu/4766244/ASURANSI\\_PERTANIAN\\_SEBAGAI\\_ALTERNATIF](https://www.academia.edu/4766244/ASURANSI_PERTANIAN_SEBAGAI_ALTERNATIF)