AGRISOCIONOMICS
Jurnal Sosial Ekonomi dan Kebijakan Pertanian
ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

ANALYSIS OF FARMERS' RISK PREFERENCES IN RICE FARMING INSURANCE PROGRAM IN SRAGEN REGENCY

Mochammad Immam Dzulfriansyah[1*], Wiludjeng Roessali[1], and I Ketut Kariyasa[2]
[1]Agribusiness, Faculty of Animal and Agricultural Sciences, Universitas Diponegoro, Semarang, Central Java, Indonesia
[2]Ministry of Agriculture, Jakarta, DKI Jakarta, Indonesia

*Correspondence Email: mochimmam@gmail.com

Submitted 07 November 2023; Approved 05 August 2024

ABSTRACT

Rice farming is closely related to climate and weather in the business process, especially the on-farm process in the crop area. Climate risk in rice farming is closely related to the occurrence of floods, droughts, and attacks of Plant Disturbing Organisms (OPT). Therefore, it is necessary to overcome uncertainty to protect farmers and their farms, namely agricultural insurance. Agricultural insurance shows partiality to farmers to anticipate the risk of farming losses. Sragen Regency is one of the rice production centers in Central Java Province, so its farms need to be protected from risks through Rice Farming Insurance (AUTP). The purpose of this study is to analyze farmers' behavior in conducting rice farming through their risk preferences in Sragen Regency. The research was conducted using the survey method. Data were collected by interview technique using questionnaires. The number of samples taken from 100 rice farmers in Sragen Regency from three representative Sub-districts with specific criteria, namely Tanon Sub-district, Sidoharjo Sub-district, and Sambirejo Sub-district. The population in this study are rice farmers who participated in the Rice Farming Insurance (AUTP) program from 2018 to 2020. Data analysis uses the Multiple Price List (MPL) approach. Some previous studies analysing farmers' willingness to pay premiums in the AUTP programme have not included farmers' risk preference factors in the analysis. In addition, there is no research that discusses farmers' willingness to pay for AUTP premiums in Sragen Regency. Therefore, this research is expected to be a literature study in formulating strategies related to the implementation of the AUTP programme in the future by considering farmers' risk preferences, especially in Sragen Regency. The results showed that rice farmers in Sragen Regency have a very risk-averse risk preference, which means that they are risk-averse individuals when farming. Therefore, the Rice Farming Insurance (AUTP) program can be utilized by farmers as a form of risk mitigation implementation in their farming operations.

Keywords*: agriculture insurance, rice farming, risk, risk preference*

BACKGROUND

Rice farming is inseparable from the upstream subsystem to the downstream subsystem which aims to distribute agricultural commodities to consumers according to their useful value. On the other hand, rice farming is closely related to climate and weather in the business process, especially the on-farm process in the planting area. Climate risk in rice farming is closely related to climatic events, such as floods and droughts. The area of rice paddy fields that experience floods, droughts and pest attacks is quite significant in reducing rice production (Estiningtyas, 2015). Aripbilah and Suprapto (2021) stated that Sragen Regency is a rice-producing regency as well as a regional rice supplier in Central Java. The large amount of rice farming certainly requires large water consumption and it is

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

feared that it will not be sufficient in the dry season. This is because the risk of drought in Sragen Regency is high based on the Drought Risk Index (IRB). In addition, the Disaster Risk Report (KRB) Central Java Province shows that Sragen Regency has a high flood hazard index (Badan Penanggulangan Bencana Daerah Provinsi Jawa Tengah, 2015).

Efforts to overcome uncertain conditions such as floods, droughts and pests are needed to protect farmers and their farms. This policy instrument is used as a mitigation measure in reducing the risk of farmer losses (Pasaribu et al., 2010). Pasaribu (2015) explained that the phenomenon of global climate change has recently become more extreme and difficult to predict. In the agricultural sector, such global climate change greatly affects the performance of agricultural businesses and farming systems. Given that the impact of climate change is very detrimental to farmers, especially the threat of crop damage that can result in crop failure, the protection of farmers and their farms is considered very necessary.

Agricultural insurance shows partiality to anticipate the risk of farming losses. Rice as a national strategic commodity is one of the targets of protection due to its vulnerability to climate change and the risks it poses (Pasaribu, 2015). In addition, one of the objectives of agricultural insurance is to provide protection to farmers in the form of working capital assistance in the case of crop damage or crop failure caused by natural disasters, attacks by plant pest organisms, disease outbreaks, the impact of climate change, and other risks as contained in the guidelines for implementing the AUTP program. This ensures that farmers can continue to farm by planting rice again after crop failure in the next planting season.

The plantation area included by farmers in the AUTP program in Sragen Regency reached 2,737.25 ha in 2021 where the amount of land area decreased when compared to 2020 of 4,567.35 ha. Meanwhile, the realization of AUTP in 2018-2020 increased sequentially, namely 996.55 ha, 2,342.43 ha, and 4,567.35 ha. The fluctuating realization of AUTP in Sragen Regency in terms of the area of land insured by farmers allegedly shows that not all farmers have utilized AUTP as a form of risk mitigation for their own farms.

Farmers' participation in AUTP shows that farmers understand the function of AUTP as a form of farming risk mitigation (Ainurrahman et al., 2022). Zakirin et al. (2013) explained that various business activities in agriculture often occur extreme situations in the form of risk events and uncertainty events. The risk of agricultural commodity production is greater than the risk of non-agriculture because agriculture is strongly influenced by nature, such as weather, pests, diseases, droughts and floods. These risks can cause farmers to experience crop failure in their rice farming.

Senapati (2020) classifies that behavior of farmer as a human individual in the face of risk is grouped into three, including farmer who take a risk (risk lover), farmer who are neutral to risk (risk neutral), and farmer who avoid risk (risk averse). The following behaviors reflect farmers' risk preferences. Jin et al. (2016) explains that risk preference is a factor that influences farmers to participate in insurance programs. Farmers who have risk preferences as risk averse are willing to pay rice farming insurance premiums to delegate the risk of their business activities.

Farmers' willingness to pay for their participation in the AUTP programme is influenced by a number of factors. Household size, size of land owned, awareness of agricultural insurance, credit access, farmer's age significantly affected willingness to pay for agricultural insurance (Muraya et al., 2024). Additionally, the risk preference factor represents a compelling rationale for farmers to participate in the AUTP (Ainurrahman et al., 2022). Nevertheless, the risk preference of farmers has

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

not been extensively considered by previous researchers in their analysis of farmers' willingness to pay for AUTP, particularly in Indonesia.

The geographical location of Sragen Regency, where a number of areas are adjacent to the Bengawan Solo River, increases the risk of rice farming crop failure due to flooding. Pratiwi et al. (2020) said that flooding has become a recurring phenomenon that it causes damage to rice fields in Central Java, especially when excessive rainfall occurs. The results show that monthly rainfall exceeding a certain threshold (about 200 mm per month) can cause damage to rice plants. In addition to the inherent risk of flooding, the introduction of rice farming in Sragen Regency carries the additional risk of crop failure due to drought. Aripbilah and Suprapto (2021) said that the risk of drought occurrence in Sragen Regency is around 50%. It is anticipated that the introduction of AUTP will serve as a risk management strategy for farmers, enabling them to anticipate and mitigate potential risks associated with their agricultural practices. Consequently, this study seeks to examine the willingness to pay of farmers in Sragen Regency to participate in the AUTP, with a particular focus on understanding their risk preferences.

RESEARCH METHODS

Location and Research Time

Tanon Sub-district, Sidoharjo Sub-district, and Sambirejo Sub-district in Sragen Regency, Central Java Province were selected as the research locations. Tanon Sub-district is the Sub-district with the highest number of AUTP participants in 2018-2021 in Sragen Regency and its geographical location is close to Bengawan Solo River. Sidoharjo Sub-district is one of the areas that showed an increase in the number of land insured through the AUTP program in 2019 and 2020. However, no farmers from Sidoharjo Sub-district participated in the AUTP program in 2021. Besides, Sidoharjo Sub-district is the sub-district with the largest land area participating in AUTP and the most AUTP participants in Sragen Regency in 2020. Meanwhile, Sambirejo Sub-district is the area with the lowest farmer participation in the AUTP program from 2018 to 2021. The research time was carried out from June to August 2023. The findings from these research locations can be used to inform a more comprehensive understanding of farmers' risk preferences in Sragen Regency. This will assist in developing a deeper insight into the relationship between farmers' risk preferences and their willingness to pay for AUTP.

Research Methods and Sampling

The sampling technique was used cluster random sampling. Sugiyono (2019) explained this technique is used through two stages, namely determining the regional sample and then determining the individuals in the area by sampling. The population in this study is total number of rice farmers who have participated in the AUTP program in Sragen Regency, both those who have and have not submitted claims during the 2018-2021 range according to the sample area used as the research location, as many as 27.320 farmers. The population is spread across Tanon Sub-district with 3.024 farmers, Sidoharjo Sub-district with 2.726 farmers, and Sambirejo Sub-district with 491 farmers. (Ditjen Prasarana dan Sarana Pertanian Kementerian Pertanian, 2022). Based on the Slovin formula and proportional allocation, the number of farmers sample members in each Sub-district is shown in Table 1.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

Table 1. Number of Research Sample Members

No.	Sub-district	Number of Population (farmers)	Number of Sample Members (farmers)
1	Tanon	3,024	$48.45 \approx 48$
2	Sidoharjo	2,726	$43.68 \approx 44$
3	Sambirejo	491	$7.87 \approx 8$
	Total	6,241	100

Source: Direktorat Jenderal Prasarana dan Sarana Pertanian (2022)

The three sub-districts were selected as research locations to identify the risk preferences of farmers from each Sub-district. Given that Tanon Sub-district has the highest number of farmers' participation in Sragen Regency, it is suspected that the farmers in this Sub-district have risk-averse preference. Conversely, Sambirejo Sub-district, which has less participation than Tanon and Sidoharjo Sub-districts, is suspected to have risk preferences as risk-lover.

Farmers' behavior in dealing with farm risks can be identified through risk preferences using the Multiple Price List (MPL) approach. Mutiple Price List method proposed by Holt and Laury was used to identify farmers' preferences regarding the risks involved in doing business (Holt and Laury, 2002; Jin et al., 2016; Senapati, 2020; Ainurrahman et al., 2022). Jin et al. (2016) mentioned that the Mutiple Price List is widely implemented in research on farmers' risk preferences. In addition, the Mutiple Price List method has the advantage of being easy to explain and use to obtain true risk preferences. The Mutiple Price List method provides 2 (two) options for rice farmers to choose from that have a certain probability. The rice farmer, as the research respondent, will choose one of the two options that he or she feels provides greater profit.

Holt dan Laury (2002) applied two options, option A and option B in his research entitled Risk Aversion and Incentive Effects to find out the risk preferences of his respondents in determining their lottery choices through (ten) pair choices with the probability of profit that can be obtained later. Ainurrahman et al. (2022) modified option A and option B of the Mutiple Price List method in his research where option A is the safe choice and option B is the risky choice as a form of reflection of rice farming in one growing season in Jember Regency. The results of respondents' choices became a reference for further Mutiple Price List processing using Constant Relative Risk Averse (CRRA) to identify respondents' risk preferences. Anderson and Mellor (2009) put forward the utility function of CRRA as follows.

$$U(Y) = \frac{Y^{1-r}}{1-r}$$

Jin et al. (2016) states that the value of r indicates the respondent's risk preference. Based on CRRA, $r < 0$ indicates *risk lover*, $r = 0$ indicates *risk neutral*, and $r > 0$ indicates *risk averse*. Holt dan Laury (2002) classify risk preferences based on the calculation of the r value in Table 2.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

Tabel 2. Risk Reference Classifications

Safe Choices	Range of *r* Value	Classifications
0-1	$r < -0.95$	Highly risk taker
2	$-0.95 < r < -0.49$	Very risk taker
3	$-0.49 < r < -0.15$	Risk taker
4	$0.15 < r < 0,15$	Risk neutral
5	$0.15 < r < 0.41$	Slightly risk averse
6	$0.41 < r < 0.68$	Risk averse
7	$0.68 < r < 0.97$	Very risk averse
8	$0.97 < r < 1.37$	Highly risk averse
9—10	$1.37 < r$	Do nothing

Source: Holt and Laury (2002)

The first step in using the multiple price list method is to determine the number of safe options selected by respondents in sequence before moving to a risky option as many as 10 (ten) option pairs with certain probabilities ranging from 0.1 to 1. Each choice pair has a uniform probability ratio between the safe option (Option A) and the risky option (Option B). Anderson and Mellor (2009) explains that respondents will usually choose Option A in the first pair of choices where the opportunity to make a profit on Option B is relatively more difficult. Even though Option B offers higher returns than Option A. The point at which respondents switch from safe to risky options can be used to classify their level of risk aversion. Respondents who chose Option A in four consecutive pair choices from the start, then switched to Option B in the fifth pair choice indicated risk neutral. Respondents who are risk averse will choose Option A more than four times, while respondents who are risk takers will choose Option A less than four times.

Option A in this study refers to farmers' income through rice farming activities that follow the Rice Farming Insurance (AUTP) program, while Option B does not follow the AUTP program. The determination of the yield value included in the Option A and Option B pairs is based on the rice farming revenue per one ha. Farmers who participate in the AUTP program receive a guarantee for their farm damage of Rp 6,000,000/ha with a minimum land damage of 75% per natural plot. The calculation of farm income can be expressed as stated by Suratiyah (2015) about Total Revenue (TR).

Option A as a safe option that participates in the AUTP program obtains indemnity in accordance with the Rice Farming Insurance Guidelines of Rp 6,000,000/ha, while Option B as a risky option does not have any protection in the event of crop failure up to 75% per natural plot of their farm area. Expected yield is the difference of the output value of each option pair Option A and Option B based on its probability. The Multiple Price List pair options in this study can be seen in Table 3.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

Table 3. Ten Multiple Price List Pair Options Based on Farm Revenue

Pairing Option	Option A		Option B		Expected Result* (Rp)
	Probability	Total Revenue (Rp)	Probability	Total Revenue (Rp)	
1	0.1 0.9	29,593,404 13,398,351	0.1 0.9	35,512,084 8,878,021	3,476,429
2	0.2 0.8	29,593,404 13,398,351	0.2 0.8	35,512,084 8,878,021	2,432,528
3	0.3 0.7	29,593,404 13,398,351	0.3 0.7	35,512,084 8,878,021	1,388,627
4	0.4 0.6	29,593,404 13,398,351	0.4 0.6	35,512,084 8,878,021	344,726
5	0.5 0.5	29,593,404 13,398,351	0,5 0.5	35,512,084 8,878,021	-699,175
6	0.6 0.4	29,593,404 13,398,351	0.6 0.4	35,512,084 8,878,021	-1,743,077
7	0.7 0.3	29,593,404 13,398,351	0.7 0.3	35,512,084 8,878,021	-2,786,978
8	0.8 0.2	29,593,404 13,398,351	0.8 0.2	35,512,084 8,878,021	-3,830,879
9	0.9 0.1	29,593,404 13,398,351	0.9 0.1	35,512,084 8,878,021	-4,874,780
10	1.0 0.0	29,593,404 13,398,351	1.0 0.0	35,512,084 8,878,021	-5,918,681

Information: * Not shown in questionnaire
Source: Secondary Data Processed (2023)

The data source for the amount of production (Q) used in the calculation of Option A is based on the average rice production each Sub-district in Sragen Regency in 2021 as reported by BPS Kabupaten Sragen. Option B calculation is based on the amount of rice production using hybrid rice seeds where the production yield is higher than using rice seeds in general. Hybrid rice is the result of the mating of two superior parents that are proven to produce a potential yield of about 20% higher than inbred or local rice. (Widyastuti et al., 2022). For the source of price data (P), both Option A and Option B, based on the average price of Harvested Dry Grain (GKP) each month in 2021 accordance with the average monthly grain price at farmers level reported by BPS. Determine the value of the farmer's risk preference coefficient of each respondent based on the number of safe pair options chosen using Constant Relative Risk Averse (CRRA). Meanwhile, the measurement of farmers' risk preferences is based on Total Revenue (TR) with following utility function.

$$U(TR) = \frac{TR^{1-r}}{1-r}$$

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

Assessment of risk preference based on the value of r. The greater the assessment of utility for monetary value, the more risk-averse it is assumed to be (Ainurrahman et al., 2022). The calculation of the *r* value in determining the risk preference of respondents in this study as risk neutral is when the respondent chooses the first four pair options of Option A, then chooses the next six pair options of Option B. Therefore, the calculation of the *r* value can be presented as follows.

$$0.4\left(\frac{29.59^{1-r}}{1-r}\right)+0.6\left(\frac{13.4^{1-r}}{1-r}\right)=0.4\left(\frac{35.51^{1-r}}{1-r}\right)+0.6\left(\frac{8.88^{1-r}}{1-r}\right)$$
$$r\approx -0.13$$

The last step is to determine the classification of respondents' risk preferences by grouping the *r* coefficient values based on the classification range in accordance with *r* coefficient value range proposed by Holt and Laury (2002). The risk preference classification of rice farmers in Sragen Regency is shown in Table 4.

Table 4. Risk Classification of Rice Farmers in Sragen Regency Based on the Range of Coefficient Value *r*

No.	Number of Safe Options	Range of Value *r*	Classification
1	0-2	r < -0.55	Very risk taker
2	3	-0.54 – -0.14	Risk taker
3	4	-0.13 – 0.24	Risk neutral
4	5-6	0.25 – 0.62	Risk averse
5	7	0.63 – 1.03	Very risk averse
6	8-10	1.04 < r	Do nothing

Source: Secondary Data Processed (2023)

RESULT AND DISCUSSION

General Condition in Sragen City

Sragen Regency has an average rainfall of 3,287 mm a year (BPS Kabupaten Sragen, 2017). This needs attention for farmers as business actors in the agricultural sector in Sragen Regency because the probability of rainfall and the high intensity of rain that falls can cause the risk of flooding for a number of areas, especially rice fields adjacent to rivers and irrigation channels. The annual rainfall in Sragen Regency is quite high because it is more than 2,500 mm a year (BMKG, 2022). Drought risk in Sragen Regency can reach 50% (Aripbilah and Suprapto, 2021). According to Sumastuti and Pradono (2016), Sragen Regency is an area that is susceptible to both flooding and drought. The La Nina and El Nino climate phenomena, which periodically occur in the Indonesian region, can increase the potential risk of flooding, drought, and attacks by pests in Sragen Regency. Rice farmers can respond to this climate risk by implementing risk management strategies that align with their risk preferences.

Risk Preference Analysis of Rice Farmers in Sragen Regency

Risk preference is a condition that describes individual decisions when facing risky or less risky choices (Weber & Hsee, 1998). Preference for risk and uncertainty plays an important role in farmers' decision-making when faced with options that have potential risks (Di Falco and Vieider, 2022). Risk preferences of respondent farmers are illustrated through the results of measuring their

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

risk preferences with the multiple price list method approach proposed by Holt and Laury (2002). This method identifies the risk preferences of respondent farmers through their selection of two pairs of options, option A or option B, which have certain probabilities in a sequence of 10 questions. Option A is the safe option because the farm is insured, in other hand option B is the risky option where the farm is not insured even though there is a greater chance of farm revenue. The results of the option selection show the value of the coefficient r which is used to identify the risk preferences of each respondent farmer. The distribution of risk preferences of rice farmers in Sragen Regency was presented in Table 5.

Tabel 5. Risk Preference Distribution of Rice Farmers in Sragen Regency

Risk Preference	Average *r* Value (score)	Total (farmers)
Very risk taker	-1.42	23
Risk taker	-0.54	5
Risk neutral	-0.13	6
Risk averse	0.44	40
Very risk averse	1.03	2
Do nothing	3.40	24
Total		100

Source: Primary Data Processed (2023)

Based on Table 5 shows that the risk preferences of rice farmers in Sragen Regency are spread in the range of very risk taker to do nothing and most respondent farmers have risk averse preferences as many as 40 people with an average coefficient r value of 0.44. Respondent farmers who have risk preferences classified as very risk taker to risk taker there are 28 people with an average range of r coefficient value of -1.42 to -0.54. In addition, there are 24 respondent farmers who have risk preferences classified as do nothing with an average r value of 3.40 and 6 people risk neutral risk preferences with an average r value of -0.13. The distribution of respondents' risk preferences by Sub-district is shown in Figure 1.

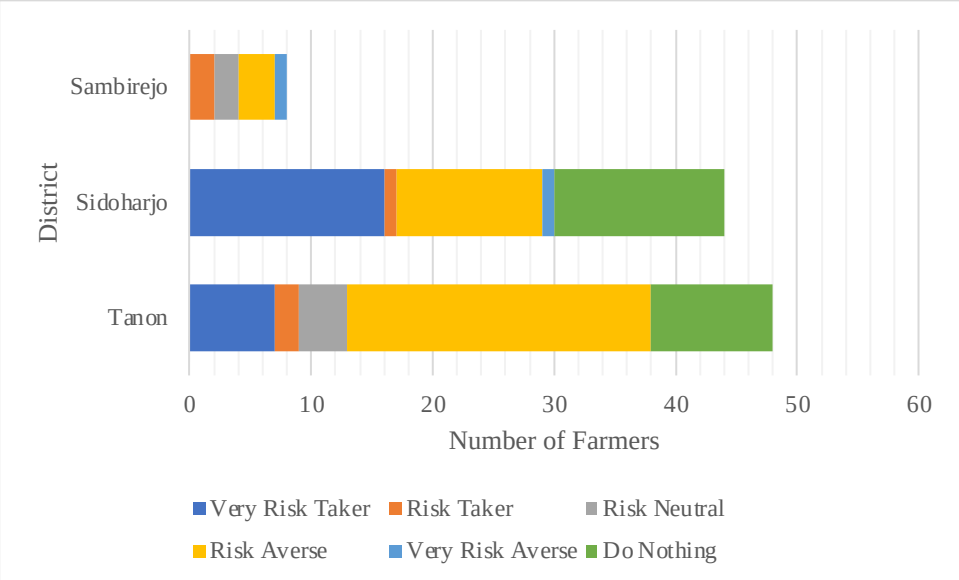

Figure 1. Distribution of Farmers' Risk Preferences by Sub-district in Sragen Regency
Source: Primary Data (2023)

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

Based on Figure 1, more respondents have risk averse preferences than other preferences in Sambirejo Sub-district, 37.5%. Respondents who have risk averse preferences are more numerous in Tanon Sub-district as much as 52.08%. However, risk averse preferences are less owned by respondents in Sidoharjo Sub-district as much as 27.27% because the percentage of risk taker preferences is greater. Farmers who do not like risk will tend to follow agricultural insurance because of their risk aversion is high. (Yanuarti et al., 2019). Roessali et al. (2022) defined that agricultural insurance is one of the financing schemes to protect farmers from risks due to climate change phenomena and insurance schemes can safeguard businesses from uncertain phenomena.

Farmers' participation in the Rice Farming Insurance (AUTP) program can be used as a risk mitigation measure for farming risks that may occur. The AUTP program guarantees compensation for crop failure, which can be used as farm working capital to protect farmers from economic losses Dewi and Suamba (2020) demonstrated that the compensation guarantee or claim fund from Rice Farming Insurance (AUTP) can cover the farm production costs and provide material assistance for farmers to resume farming in the next season. Lybaws et al. (2020) reported that the risk of rice production for AUTP participants is lower than that for non-participants. It is crucial to protect farming areas that provide farmers with their livelihoods, particularly those that are prone to droughts and floods, from climate risks. The impact of climate change on rice farming sustainability has made risk management at the farm level increasingly important, especially in areas affected by drought. Nordmeyer and Mußhoff (2023) suggest that agricultural insurance can help reduce income losses caused by drought. Agricultural insurance schemes can be an effective tool for reducing pre-disaster risks and mitigating future financial losses caused by flooding in rice farms (Fahad and Jing, 2018). Therefore, the presence of agricultural insurance and its benefits in Indonesia is expected to be utilised by farmers to manage their farming risks by participating in the AUTP program on an ongoing basis.

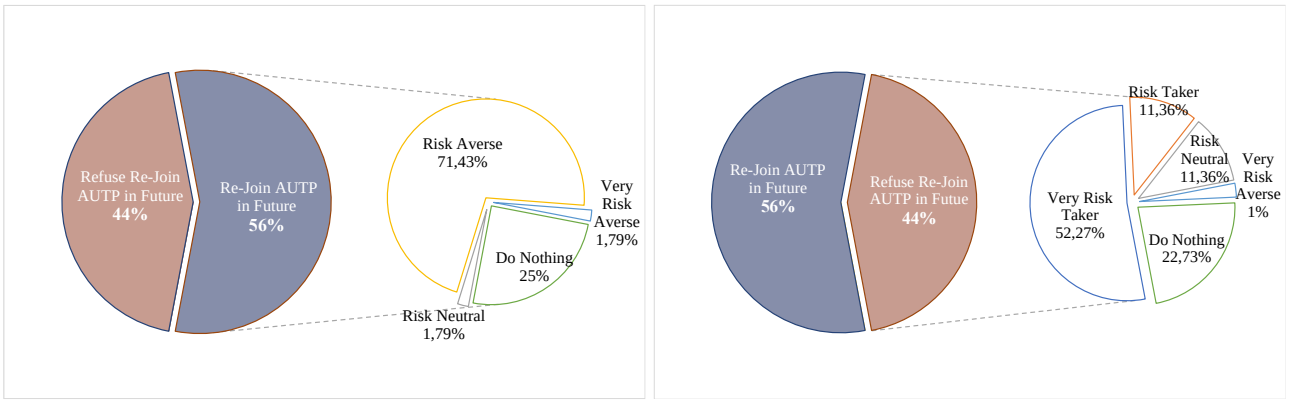

Figure 2. Farmers' Risk Preferences Based on Willingness to Re-Join AUTP Program
Source: Primary Data (2023)

The risk preference of the respondent farmers based on their willingness to participate or not to participate in the AUTP program in the future is illustrated in Figure 2. The respondent farmers who are willing to participate in the AUTP program again mostly have risk averse risk preference as much as 71.43 percent of the total willing farmers. On the other hand, very risk taker risk preference dominates for the unwilling farmers at 52.27 percent. Risk preference can influence farmers to participate in the insurance program (Jin et al., 2016). Based on the results of the study, farmers' participation in the AUTP programme in the future, apart from depending on their risk preferences, is influenced by their understanding of AUTP and their perception towards AUTP. Farmer respondents' understanding of AUTP is one of the important factors for participation because farmers

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

who know and understand the information, both provisions and benefits, about AUTP well and thoroughly can encourage them to make a decision to join AUTP. The lack of understanding about AUTP dominates for respondents who refuse to re-join AUTP in the future so that they do not understand the provisions and purposes of AUTP. This is illustrated in the field where respondents do not understand that the self-help premium paid by them depends on the size of their land and the premium amount will be calculated proportionally with a calculation base of Rp 36,000/ha. Meanwhile, respondents who re-join AUTP in the future are dominated by a high understanding of AUTP. This is illustrated in the field where the respondents understand the flow of the AUTP registration process and know that the government has subsidised the AUTP premium of Rp 144,000/ha, thus providing relief for farmers who insure their farmlands and realise the importance of implementing rice farming risk management through AUTP. Siregar et al. (2022) explains that rice farmers' understanding of AUTP as a way to mitigate the risk of crop failure can increase the participation of farmers in Tungkal Ulu Sub-district Tanjung Jabung Barat Regency in the AUTP program.

The perception of the respondent farmers towards AUTP plays a role in determining their decision to join or not in the AUTP programme in the future. The unfavourable perception towards AUTP dominates the respondents who decide not to join AUTP in the future, while the neutral and favourable perception dominates the respondents who decide to join AUTP in the future. Farmer respondents' perceptions of the AUTP program reflect the AUTP socialisation they have experienced, their motivation to join AUTP, and their personal values in the form of perceived benefits from their participation in the AUTP program. A way of making individual decisions can use perceptions that are based on: 1) internal factors, i.e. personal values; 2) external factors, i.e. AUTP socialisation from stakeholders (Rustandi & Ismulhadi, 2017). Motivation can be used to identify each person's culturally appropriate behaviours and desires. Sumaryo and Syarief (2020) said that the farmers' motivation to join the AUTP programme is high because their participation is driven by their own desire with the consideration of the guarantee for the risk of damage experienced. A good perception in this discussion is synonymous with a positive perception of the AUTP programme. As the purpose of this programme is to provide protection to farmers in the event of damage to the insured rice due to the risks borne in the AUTP program, it is expected that farmers as beneficiaries can have a good perception of the AUTP program. Of all the respondents, there are only 57 respondent farmers who feel the benefits of their participation in the AUTP program such as a feeling of calm and security in conducting rice farming because they have insurance. While the others have not felt the benefits of their participation. Purnamayani et al. (2022) explained that the benefits of AUTP felt by the farmers of Subak Desa Penarungan are that the farmers feel helped by the perceived crop failure so that the farmers can start work in their fields, such as buying seeds or fertilisers for their paddy to be planted. Farmers say that this is better than not getting anything at all due to the farming risks they experience. Mohapatra et al. (2016) stated that agricultural insurance is one method that farmers can use to protect themselves from the impact of losses due to natural disasters. Agricultural insurance helps farmers to restart production activities after experiencing crop failure. It cushions the shock of crop losses by providing farmers with protection where managing agricultural risks is an important element in the rice farming process.

Rice farmers in Sragen Regency as a whole have risk preferences in dealing with farm risks. Assessment of risk preferences is done by taking the average r value of the overall respondent farmers and the result obtained r coefficient value of 0.94 which indicates that rice farmers in Sragen Regency

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

have very risk averse risk preferences in running their rice farms. This very risk averse risk preference is reflected in the risk mitigation measures taken by farmers where insurance their farm with AUTP is not the only option, but farmers carry out massive eradication of pests and diseases as an alternative option. Roessali et al. (2022) explained further that farmers tend to prefer to bear the risk of their own farms by buying pesticides and medicines rather than paying agricultural insurance premiums. This is also driven by the belief of rice farmers in the research locations that their farms will have a successful harvest since planting rice seeds on their farms, thus forming the perception that participating in AUTP program is the same as expecting a crop failure for a few of respondents. The results and discussion are expected to provide input to relevant stakeholders regarding the identification of farmers' risk preferences to provide insight into the development of agricultural insurance programs by considering the level of risk aversion possessed by farmers in the target area's program. Prastiwi et al. (2023) added that designing the details of agricultural insurance programs based on farmers' preferences is expected to encourage the level of participation and empower farmers by playing an active role in agricultural risk management.

CONCLUSION AND SUGGESTION

Rice farmers in Sragen Regency have very risk averse risk preferences. The risk preference of very risk averse farmers reflects that rice farmers apply strategic steps that can minimize the risk of crop failure in running their farms. The utilization of the Rice Farming Insurance (AUTP) program can be optimized by farmers as an effort to mitigate the risk of their business in a sustainable manner. The researcher posits that the socialisation of the benefits derived by farmers from their participation in the AUTP program should be conducted in a simultaneous and periodic manner, affording farmers the opportunity to comprehend the positive value of AUTP in their farming. This would serve to minimise the occurrence of negative issues that are less pertinent to AUTP. Furthermore, by identifying farmers' risk preferences, stakeholders can develop the AUTP by targeting farmers who have risk preferences as risk averse. This will increase the likelihood of farmers participating in the AUTP program in a sustainable manner, which will have a positive impact on farmers by protecting them from the risks of rice farming.

REFERENCES

Ainurrahman, F., Fariyanti, A., & Tinaprilla, N. 2022. Preferensi Risiko dan Faktor Yang Memengaruhi Keikutsertaan Asuransi Usahatani Padi (AUTP) di Kabupaten Jember. Jurnal Agribisnis Indonesia (Journal of Indonesian Agribusiness), 10(2), 235–245. https://doi.org/10.29244/jai.2022.10.2.235-245

Anderson, L. R., & Mellor, J. M. 2009. Are Risk Preferences Stable? Comparing an Experimental Measure with a Validated Survey-based Measure. Journal of Risk and Uncertainty, 39(2), 137–160. https://doi.org/10.1007/S11166-009-9075-Z/TABLES/6

Aripbilah, S. N., & Suprapto, H. 2021. Analisis Kekeringan di Kabupaten Sragen Dengan Metode Palmer, Thornthwaite, dan Standardized Precipitation Index. Jurnal Sumber Daya Air, 17(2), 111–124. https://doi.org/10.32679/JSDA.V17I2.742

Badan Penanggulangan Bencana Daerah Provinsi Jawa Tengah. 2015. Dokumen Kejadian Risiko Bencana (KRB) Provinsi Jawa Tengah Tahun 2016-2020.

BMKG. 2022. Climate Outlook 2023.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

BPS Kabupaten Sragen. (2017). Letak Geografi Kabupaten Sragen. https://sragenkab.bps.go.id/statictable/2017/02/22/273/letak-geografi-kabupaten-sragen.html

Dewi, L. U. H. W. L., & Suamba, I. K. 2020. Manfaat Asuransi Usahatani Padi dalam Menanggulangi Risiko Usahatani Krama Subak di Kecamatan Penebel Kabupaten Tabanan. Jurnal Agribisnis Dan Agrowisata E-ISSN, 2685, 3809.

Di Falco, S., & Vieider, F. M. 2022. Environmental Adaptation of Risk Preferences. The Economic Journal, 132(648), 2737–2766. https://doi.org/10.1093/ej/ueac030

Ditjen Prasarana dan Sarana Pertanian Kementerian Pertanian. 2022. Realisasi Asuransi Usaha Tani Padi Provinsi Jawa Tengah 2017-2021.

Estiningtyas, W. 2015. Asuransi Pertanian Berbasis Indeks Iklim: Opsi Pemberdayaan Dan Perlindungan Petani Terhadap Risiko Iklim. Jurnal Sumberdaya Lahan, 9(1). https://doi.org/10.2017/jsdl.v9n1.2015.%p

Fahad, S., & Jing, W. 2018. Evaluation of Pakistani farmers' willingness to pay for crop insurance using contingent valuation method: The case of Khyber Pakhtunkhwa province. Land Use Policy, 72, 570–577. https://doi.org/https://doi.org/10.1016/j.landusepol.2017.12.024

Holt, C. A., & Laury, S. K. 2002. Risk Aversion and Incentive Effects. The American Economic Review, 92(5), 1644–1655. http://www.jstor.org/stable/3083270

Jin, J., Wang, W., & Wang, X. 2016. Farmers' Risk Preferences and Agricultural Weather Index Insurance Uptake in Rural China. International Journal of Disaster Risk Science, 7(4), 366–373. https://doi.org/10.1007/S13753-016-0108-3/TABLES/7

Lybaws, D. F., Alamsyah, Z., & Nainggolan, S. 2020. Analisis Preferensi Risiko Produksi dan Hubungannya dengan Keikutsertaan Petani dalam Program Asuransi Usahatani Padi (AUTP) di Kabupaten Tanjung Jabung Timur. Journal of Agribusiness and Local Wisdom, 3(1), 11–24. https://doi.org/https://doi.org/10.22437/jalow.v3i1.9788

Mohapatra, L., Dhaliwal, R. K., & Kaur, M. 2016. Farmers knowledge about the agricultural insurance scheme in Punjab. Indian Research Journal of Extension Education, 16(1), 49–53.

Muraya, D., Chege, S., & Munyiri, S. 2024. Determinants of Khat Farmers' Willingness to Pay for Agricultural Insurance. International Journal of Agricultural Economics, 9(2), 89–96. https://doi.org/10.11648/j.ijae.20240902.15

Nordmeyer, E. F., & Mußhoff, O. 2023. Understanding German farmers' intention to adopt drought insurance. Journal of Environmental Management, 345, 118866. https://doi.org/https://doi.org/10.1016/j.jenvman.2023.118866

Pasaribu, S. M. 2015. Risiko Produksi Pangan: Tantangan dan Peluang. In E. Pasandaran, (pp. 206-224). In E. Pasandaran (Ed.), Memperkuat Kemampuan Swasembada Pangan (pp. 206–224). Indonesian Agency for Agricultural Research and Development Press.

Pasaribu, S. M., Lokollo, E. M., Anugrah, I. S., Agustin, N. K., Tarigan, H., Hestina, J., & Supriatna, Y. 2010. Pengembangan Asuransi Usahatani Padi untuk Menanggulangi Risiko Kerugian 75% Akibat Banjir, Kekeringan dan Hama Penyakit. Laporan Teknis Penelitian. Kerjasama Pusat Analisis Sosial Ekonomi Dan Kebijakan Pertanian Dengan Kementerian Riset Dan Teknologi. Bogor.

Prastiwi, W. D., Dalmiyatun, T., & Roessali, W. 2023. Farmers' preference of agricultural insurance product's attributes in Pati Regency. AIP Conference Proceedings, 2586(1), 050006. https://doi.org/10.1063/5.0106702

Pratiwi, E. P. A., Hartono, A. O., Wijdan, H. Z., Nurrochmad, F., & Setyawan, C. 2020. Precipitation and flood impact on rice paddies: Statistics in Central Java, Indonesia. IOP Conference Series: Earth and Environmental Science, 612(1). https://doi.org/10.1088/1755-1315/612/1/012040

Purnamayani, N. P. A., Susrusa, K. B., & Parining, N. 2022. Asuransi Usahatani Padi (AUTP) di Subak Gede Penarungan. Jurnal Agribisnis Dan Agrowisata (Journal of Agribusiness and Agritourism), 16(1), 552. https://doi.org/10.24843/JAA.2022.v11.i02.p07

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 712-724, November 2024

Roessali, W., Mukson, M., Nurfadillah, S., & Budiraharjo, K. 2022. Farmer's perceptions on risk and determinants of risk management strategy in integrated cattle and crops farming systems. Journal of the Indonesian Tropical Animal Agriculture, 47(2), 146–154. https://doi.org/10.14710/JITAA.47.2.146-154

Roessali, W., Nikmah, A., & Setiadi, A. 2022. Strategies For Increasing Participation in The Implementation of The AUTP Program in Kudus Regency. Agrisocionomics: Jurnal Sosial Ekonomi Pertanian, 6(2), 422–431. https://doi.org/10.14710/AGRISOCIONOMICS.V6I2.9578

Rustandi, Y., & Ismulhadi, I. 2017. Analisis Pengambilan Keputusan Keikutsertaan Petani Pada Program Asuransi Usaha Tani Padi (AUTP) di Kabupaten Malang. AGRIEKSTENSIA: Jurnal Penelitian Terapan Bidang Pertanian, 16(2), 276–286. https://doi.org/https://doi.org/10.34145/agriekstensia.v16i2

Senapati, A. K. 2020. Evaluation of risk preferences and coping strategies to manage with various agricultural risks: evidence from India. Heliyon, 6(3), e03503. https://doi.org/https://doi.org/10.1016/j.heliyon.2020.e03503

Siregar, M. F., Alamsyah, Z., & Ningsih, R. 2022. Faktor-Faktor Yang Mempengaruhi Keikutsertaan Petani Dalam Program Asuransi Usaha Tani Padi (Autp) Di Kecamatan Tungkal Ulu Kabupaten Tanjung Jabung Barat. Journal of Agribusiness and Local Wisdom, 5(2), 1–11. https://doi.org/https://doi.org/10.22437/jalow.v5i2.23102

Sugiyono. 2019. Metode Penelitian Kuantitatif, Kualitatif dan R&D. ALFABETA.

Sumaryo, S., & Syarief, Y. A. 2020. Motivasi Petani Mengikuti Program Asuransi Usahatani Padi di Kabupaten Lampung Tengah. Suluh Pembangunan: Journal of Extension and Development, 2(1), 45–53. https://doi.org/10.23960/jsp.v2i1.28

Sumastuti, E., & Pradono, N. S. 2016. Dampak Perubahan Iklim Pada Tanaman Padi di Jawa Tengah. Journal of Economic Education, 5(1), 31–38.

Suratiyah, K. 2015. Ilmu Usahatani. Penebar Swadaya.

Weber, E. U., & Hsee, C. 1998. Cross-Cultural Differences in Risk Perception, but Cross-Cultural Similarities in Attitudes Towards Perceived Risk. Management Science, 44(9), 1205–1217. https://doi.org/10.1287/MNSC.44.9.1205

Widyastuti, Y., Prabowo, R. N., Wibowo, B. P., Kartina, N., Rumanti, I. A., Agustiani, N., & Mulsanti, I. W. 2022. Produksi Benih Padi Hibdrida: Kemajuan, Tantangan, dan Peluang Pengembangan di Indonesia. Jurnal Penelitian Dan Pengembangan Pertanian Vol, 41(1), 12–20. https://doi.org/10.21082/jp3.v41n1.2022.p12-20

Yanuarti, R., Aji, J. M. M., & Rondhi, M. 2019. Risk aversion level influence on farmer's decision to participate in crop insurance: A review. Agricultural Economics, 65 (2019) (No. 10), 481–489. https://doi.org/10.17221/93/2019-AGRICECON

Zakirin, M., Yurisinthae, E., & Kusrini, N. 2013. Analisis Risiko Usahatani Padi Pada Lahan Pasang Surut di Kabupaten Pontianak. Jurnal Social Economic of Agriculture, 2(1), 75–84. https://doi.org/10.26418/J.SEA.V2I1.5122