



THE EFFECT OF AGRICULTURAL INSURANCE PROGRAMS ON FARMERS PRODUCTIVITY AND WELFARE IN PETANG, BADUNG, BALI

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Abstract

The objectives of this study are 1) To find out the comparison of Minimum Work Wage (UMK) with farmers' income in Petang; 2) To analyze the effect of knowledge on insurance programs, attitudes towards insurance programs, and participation in insurance on farmer productivity in Petang; 3) To analyze the effect of knowledge on insurance programs, attitudes towards insurance programs, participation in insurance and productivity on the welfare of farmers in Petang; 4) To analyze the effect of productivity in mediating the effect of knowledge on insurance programs, attitudes towards insurance programs, participation in farmer insurance on the welfare of farmers in Petang. This research was conducted in Petang, Indonesia. Samples used in this study were 159 respondents. The sampling method used is nonprobability sampling which is a combination of accidental sampling and snowball sampling. Data collection methods used in this study were observation, structured interviews, in-depth interviews. Data analysis techniques used are descriptive analysis techniques and Structural Equation Modeling (SEM) with PLS alternatives. This study shows that 1) The average income of farmers in Petang District is lower than the Minimum Work Wage of Badung Regency in 2019; 2) Knowledge of the Insurance Program has a positive effect on productivity. Attitudes About Insurance Programs have a positive effect on the level of welfare. Participation in Insurance negatively affects the level of productivity; 3) Knowledge of the Insurance Program, Attitudes About the Insurance

Program, and Participation in Insurance has a positive effect on Welfare; 4) Productivity mediates the effect of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance for Well-being.

Keywords: Knowledge, Attitude, Agricultural Insurance, Productivity, Farmers' Welfare

INTRODUCTION

Indonesia is a country that is endowed with abundant natural resources coupled with Indonesia's position which is considered very strategic. Starting from the geographical location, where Indonesia is located in a tropical climate that has high rainfall so that almost all types of plants can live and grow quickly. In addition, in terms of geology, Indonesia is located at the point of tectonic plate movement so that many mountains are formed which are rich in mineral content.

Indonesia is also known as an agrarian country because most of the population of Indonesia has a livelihood in agriculture or farming. Agriculture is an indicator that plays an important role in economic development, the agricultural sector shows whether the approved country is developing or underdeveloped (Balakrishnama, 2013). The agricultural sector is one sector that has an important role in the national sector in Bali. In Bali, the agricultural sector still dominates the main occupations in general. According to the Central Statistics Agency (BPS) Bali Province receives 21 percent of the population in Bali working in the agricultural sector.

Bali has an institution called Subak, which supports activities in the agricultural sector. The main function of Subak is to regulate irrigation systems based on shared justice, so that farmers will continue to get water even in a state of water crisis. In addition, it can avoid conflicts between farmers just because they fight over the flow of water to their fields. Because subak is inseparable from irrigation water management activities for rice cultivation, it is true that subak is identical to rice cultivation (Pitana and Setiawan, 2004).

Activities in the agricultural sector, especially rice farming, are faced with the risk of failure caused by the unpredictable negative impacts of climate change (Turvey, 2001). Tschirley (2007) states that global warming results in a significant decrease in food crop productivity, especially in the tropics. Climate change affects agriculture in many ways (cf. Dinar and Mendelsohn, 2011; Hertel and Rosch, 2010). To overcome the losses of farmers, the government helps to seek farm protection in the form of agricultural insurance, as stated in Law Number 19 of 2013 concerning Farmer Protection and Empowerment, which has been followed up with the issuance of the Minister of Agriculture Regulation No. 40 of 2015 concerning Agricultural Insurance Facilitation. Badung Regency Government through the Department of

Agriculture and Food, has carried out one of the programs namely the Rice Farming Insurance program since 2015. According to Martin Odening (2013) Weather risk shows characteristics that are often a classic requirement for agricultural insurance. This program is focused on protecting the loss of economic value of rice farming by farmers due to crop failure, so farmers have working capital for the next planting process. Agricultural Insurance is a program as a means of risk transfer that can provide compensation in the form of working capital due to farming losses so that the sustainability of farming can be guaranteed. Through rice farming insurance, the government guarantees damage to rice plants due to flooding, drought, and attacks by pests and plant diseases or plant pests (OPT). Based on world bank criteria, more poor farmers are caused by declining production as a result of various pests and the presence of weather changes (Imoloame, 2014).

The Badung Regency Government provides agricultural insurance for only 1,300 hectares of rice fields from 10,000 hectares of rice fields. 1,300 hectares of paddy fields in Badung are considered the most frequent crop failures so the budget for insurance is focused on the area. Areas in Badung that are prone to drought include Sembung, Carangsari, and Bengkel areas. Agricultural land that is often affected by rat pests in the Bongkasa area. Every district in Badung gets a quota to take part in agricultural insurance programs. According to the Agriculture and Food Service Office of Badung Regency since 2017 agricultural insurance is charged to the State Budget (APBN) of 80 percent and charged to the Regional Budget of Revenue and Expenditure (APBD) by 20 percent. Since the issuance of the agricultural insurance program the number of members or participants of agricultural insurance in Badung Regency has increased in terms of area. The following are the number of agricultural insurance participants in terms of land area.

Badung Regency consists of six sub-districts namely Petang, Abiansemal, Mengwi, North Kuta, Kuta, and South Kuta. Among the Sub-Districts in Badung Regency, Petang District is a sub-district with a high crop failure rate in Badung Regency in 2018. In 2018 there were eight subaks that submitted claims, namely Subak Sangeh covering an area of 0.35 hectares due to drought and 8.9 hectares affected by blast disease. 6.6 hectares of Subak Sempidi Prosperous Farming Business Group due to blast disease. Subak Bukti of Mengwi sub-district covering 0.29 hectares due to blast disease. Subak Batan Badung Mengwi 0.76 hectare is stricken with blast disease. Subak Tungkul Dalem, Mengwi sub-district with an area of 2.9 hectares due to drought. Subak Pacung Babakan Mengwi is 2 hectares wide due to drought. Subak Bergiding Petang District 9 hectares. Area of 7, 38 hectares of drought and 1.62 hectares of blast. The Sub-district of Sub-district Petang was also hit by a blast of 1.39 hectares. The evening district is second in the sub-district with a total crop failure rate of 10.39 hectares.

Most of the Petang Subdistrict residents work in the agricultural sector, this is due to the favorable geographical conditions of the Petang District. Petang District has the potential to develop rice farming, but it cannot be separated from the risk of crop failure so productivity is less than optimal. Productivity in the agricultural sector is influenced by socio-economic factors that are around it (Ramalia, 2011). Natural disasters, drought, wind and others are external factors that cause farmers' production to be very minimal or even fail to harvest which results in farmers losing money (Damanik, 2014). Frequent crop failures have caused the welfare of farmers in Petang District to be classified as low. In addition, farmers do not yet know how much benefit from managing the risk of crop failure through agricultural insurance.

The purpose of this study is 1) To analyze the comparison of Minimum Work Wage (UMK) with farmers' income in Petang; 2) To analyze the effect of knowledge on insurance programs, attitudes towards insurance programs, and participation in insurance on farmer productivity in Petang; 3) To analyze the effect of knowledge on insurance programs, attitudes towards insurance programs, participation in insurance and productivity on the welfare of farmers in Petang; 4) To analyze the role of productivity in mediating the effect of knowledge on insurance programs, attitudes towards insurance programs, participation in farmer insurance on the welfare of farmers in Petang.

Theoretically, this research is expected to be able to enrich the results of research and be a reference for further research in strengthening the development of welfare theory and theories used in relation to agricultural insurance programs on the productivity and welfare of farmers. Practically this research is expected to provide input and can be used to formulate policies, especially in the agricultural sector in Petang District. relating to agricultural insurance programs to the productivity and welfare of farmers.

CONCEPTUAL FRAMEWORK

Global climate change produces a new set of hazards in the agricultural sector and in many cases requires farmers to adjust their farming practices (Smit and Skinner, 2002). Development in the agricultural sector in order to be sustainable and improve the welfare of farmers is made a program called Agricultural Insurance where, Agricultural Insurance is a tool to reduce financial risk, by collecting exposure units in sufficient quantities to make so that individual losses can be estimated then losses which can be predicted is shared equally by those who join. Through rice farming insurance is expected to be able to provide guarantees against crop damage due to flooding, drought, as well as pests and plant diseases or plant pests, so farmers will receive compensation as working capital for the sustainability of their farming.

When the need for an insurance market arises, insurance policies are usually highly subsidized (Glauber et al., 2002; Goodwin, 2001). However, even with subsidies, most farmers do not participate in policies (Miranda and Glauber, 1997; Glauber, 2006). So that the knowledge of the insurance program needs to be increased through counseling, training, education and training programs, considering that farmers in Indonesia are on average 45-54 years old and the average education is Elementary Schools (Central Statistics Agency, Agricultural Census 2013), so causing catching power, attitude, and participation in the new program will be more difficult to implement. On the other hand, acquisition of compensation due to flooding, drought, and attacks of pests and plant diseases or plant pests (OPT), is expected to increase farmer productivity. According to Dyas Achti (2011) productivity affects the welfare of farmers. Thus, the provision of agricultural insurance in addition to increasing productivity is also expected to be able to improve the welfare of farmers because they receive compensation if they experience crop failure.

The economy in rural areas is synonymous with agricultural development, this is because the majority of rural household income comes from the agricultural sector (Astari, 2015). The average income of farmers according to the results of the 2013 agricultural census, is 12.4 million Rupiah per hectare per year or as much as 1 million Rupiah per month. Small farmer income is an indicator that welfare in the agricultural sector is below average. Welfare is obtained because of the community empowerment provided through the process of socialization, assistance and training from the government so that people know the targets that must be achieved for the welfare of the community (Lalaun & Agus, 2015).

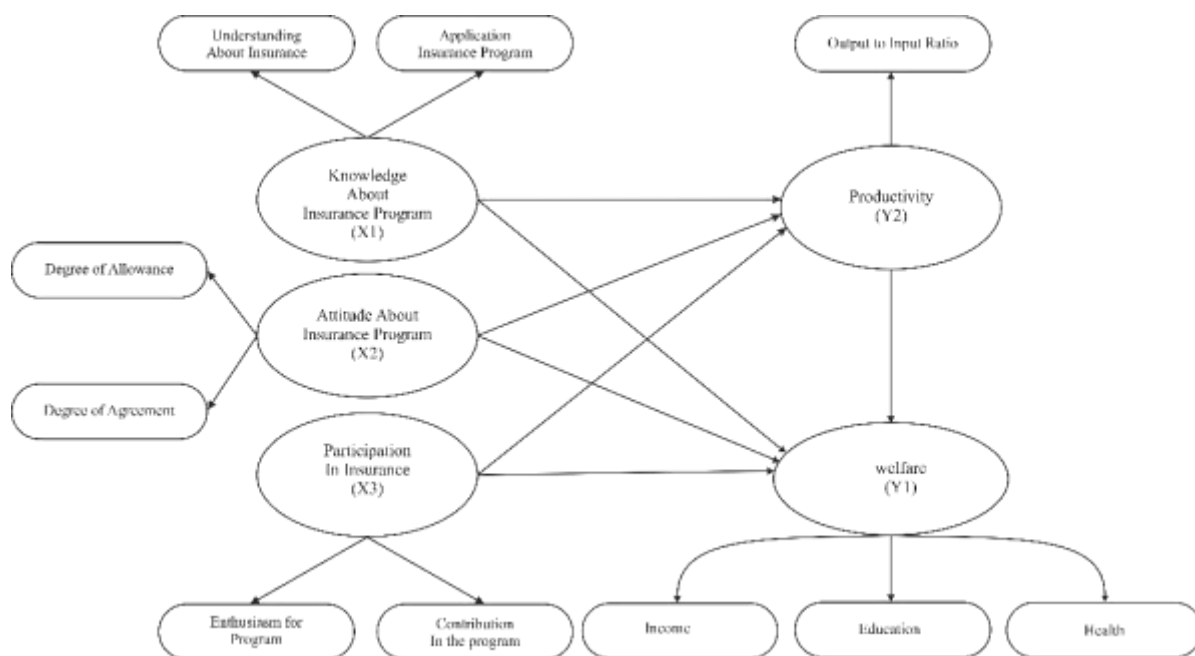


Figure 1. Conceptual Framework

Based on the formulation of the problem, research objectives, and the study of relevant theories or the results of previous studies, the hypotheses in this study are:

- 1) Knowledge of insurance programs, attitudes towards insurance programs, and participation in insurance have a positive effect on farmer productivity in Petang District.
- 2) Knowledge of insurance programs, attitudes towards insurance programs, participation and productivity in insurance have a positive effect on the welfare of farmers in Petang District.
- 3) Productivity mediates the effect of knowledge on insurance programs, attitudes towards insurance programs, participation in farmer insurance on farmers' welfare in Petang District.

RESEARCH METHODS

The research design used in this study is causal associative design, which is a study that examines the effect of a variable on other variables or knows the relationship between variables (Sugiyono, 2014: 55-56). This research was conducted to determine the effect of agricultural insurance programs on the productivity and welfare of farmers in the District of Petang.

Data collection methods used were observation, structured interviews and in-depth interviews. Furthermore, the data obtained in this research will be processed and analyzed and supported with theoretical studies and empirical studies in order to prove hypotheses and answer the problem formulations that have been made previously that have been collected through the development of instruments in the form of questionnaires will be processed using descriptive analysis techniques and techniques SEM structural equation analysis with Partial Least Square (PLS) Alternative. This analysis technique was chosen because it does not assume the data must be on a particular measurement scale because it is based on nonparametric statistics and can also be used for a relatively small number of samples. The research location was carried out in Subak in Petang District. The time of the study is calculated from the survey process of the location of the research location, data collection up to the process of writing the research results. Researchers chose the location of the study in the Petang because Petang is a sub-district with the most population with a living in the agricultural sector in Badung Regency.

The type of data in this study consists of quantitative and qualitative data. The source of data in this study is primary data. The data used in this study were collected using data collection methods such as interviews, questionnaires, and observations. Interview is a process carried out by a person through direct questioning between researchers and related respondents to get the data or information needed. Questionnaire is a list of questions that have

been prepared previously and given to selected respondents to obtain data or information from respondents. With the results of the questionnaire obtained information relevant to the purpose of the survey and can obtain accurate information. Observation is a technique used to complete the data by looking and looking directly at the object to be examined.

The number of samples in this study based on the Slovin formula were 159 respondents from 1,544 farmers. The following are the calculations for determining the number of samples used based on the Slovin formula.

$$n = N / (1 + Ne^2) \quad (1)$$

$$n = 1,544 / (1 + 1,544 \cdot 0,075^2)$$

$$n = 1,544 / 9.7$$

$$n = 159$$

Where;

n = Number of sample members

N = Number of popular members

e = Critical value (accuracy limit of 0.075 or 7.5 percent)

The data analysis technique used is the Structural Equation Model (SEM) analysis technique with alternative PLS (Partial Least Square). Structural equation model (SEM) is a statistical technique that allows testing a series of relatively complex relationships simultaneously and tiered. According to Ghozali (2014) PLS is a powerful analysis method because it does not assume the data must be on a specific measurement scale because it is based on nonparametric statistics and can also be used for a relatively small number of samples. The purpose of Partial Least Squares (PLS) is to help researchers to get the value of latent variables for predictive purposes. The formal model defines latent variables as linear aggregates of the indicators. In the PLS the inner model is also called the inner relation which describes the relationship between latent variables based on the substance of the theory:

$$Y_1 = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e_1 \dots \dots \dots (18)$$

$$Y_2 = \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7 Y_1 + e_2 \dots \dots \dots (19)$$

RESULTS AND DISCUSSION

The convergent validity of the measurement model that has reflective indicators can be assessed from the loading factor (ie the correlation between item scores / component scores and construct scores) indicators that measure the construct. An indicator can be declared valid if it has a loading factor above 0.7 against the intended construct. In this research, all loading factor indicators have values greater than 0.7. This shows that the convergent validity

requirements have been fulfilled. The construct feasibility can also be seen from discriminant validity through Average Variance Extracted (AVE). This study has a AVE value above 0.5. This means that discriminant validity testing by seeing the AVE value shows that all variables X1, X2, X3, Y1 and Y2 can be said to be valid. Furthermore, it can be seen that Composite Reliability is generally used as a reflective indicator that aims to measure the internal consistency of a construct. In this study the Composite Reliability value of each construct is greater than 0.70. This means that all constructs have high internal consistency. In addition, a construct is also seen by its reliability through Cronbach's Alpha. Cronbach's Alpha value or Composite Reliability value must be greater than 0.7, but if the results are close to 0.7 (such as 0.6), it is still acceptable in exploratory studies (Hair et al, 2006) . In this study the Cronbach's Alpha value of each construct is greater or closer to 0.70 so it can be said that the gauges in this study are reliable.

Farmer's income

Based on the results of this study it can be concluded that the average farmer's income is Rp. 4,295,000, - each planting period or Rp. 1,431,341, - every month this means that farmers' income is not comparable (lower) to the Minimum Work Wage (UMK) of Badung Regency. Based on the income of farmers in the District of Petang can be detailed as follows.

Table 1. Farmer's Income for Each Harvest in Petang District

Farmer's Income Every Harvest (Million Rupiah)	Number of (people)	Percentage (%)
<3	46	28.9
3 - 9	100	62.9
>9	13	8.2
Total	159	100

Based on the results of the study showed that 62.9 percent of farmers earn 3-9 million rupiah each planting season or earn 1-3 million rupiah per month. While 28.9 percent of farmers earn less than 3 million per planting period or earn less than 1 million per month, and 8.2 percent of farmers earn more than 9 million each planting period or earn more than 3 million every month. This can be caused by the low quality of Human Resources, making it difficult for farmers to use technology in farming to improve their welfare. Therefore farmers need to be assisted in the use of agricultural technology by field officers and be more proactive in the use of agricultural technology.

Effect of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance on Productivity

Based on the results of data processing, the Effect of Knowledge About the Insurance Program, Attitudes About the Insurance Program, and Participation in Insurance on Productivity are detailed as follows.

Table 2. Effect of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance on Productivity

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	P Values
X1 -> Y1	0.709	0.677	0.304	0.093
X2 -> Y1	0.012	0.011	0.019	0.039
X3 -> Y1	-0.473	-0.524	0.468	0.029

Effect of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance on Productivity. The Knowledge Variable towards the Insurance Program is not significant towards Productivity with p value = 0.093 which is greater than α 10 percent (0.10), so the hypothesis is accepted. Based on this significance, the Knowledge Level of the Insurance Program affects the productivity of farmers. Knowledge of the Insurance Program will play a role in assisting farmers in increasing productivity. The higher the level of respondents' knowledge of the program, the higher their productivity.

The results of this study are in line with research conducted by Mustikorini, 2005, which is based on the results of his research knowledge has a significant effect on productivity levels. Likewise with the results of research conducted by Supriyanto, 2012, which states that knowledge affects productivity.

Attitude Variable about Insurance Program is significant towards Productivity with p value = 0.039 which is smaller than α 10 percent (0.10), then the hypothesis is accepted. Based on this significance, the Attitude About the Insurance Program affects the productivity of farmers. Farmers' attitudes about the Insurance Program play a role in helping farmers increase productivity. The better the attitude of the respondents about the program, the better their productivity.

The results of this study are in line with research conducted by Sunardi, 2006, which is based on the results of his research attitude has an influence on productivity. Likewise with the results of research conducted by Supriyanto, 2014, which states that attitudes have a positive and significant effect on productivity.

Variable Participation in Insurance is significant on Productivity with p value = 0.029 which is smaller than α 10 percent (0.10), then the hypothesis is accepted. Based on this significance, Participation in Insurance affects the level of productivity. Farmer participation in the program plays a role in increasing productivity.

The results of this study are in line with research conducted by Kholifa, 2016, which is based on the results of his research that participation has a positive effect on productivity. Likewise, the results of research conducted by Yuliaty, 2010, which states that participation affects productivity.

The Effect of Knowledge About the Insurance Program, Attitudes about the Insurance Program, and Participation in Insurance on Welfare

Based on the results of data processing, the Effect of Knowledge About the Insurance Program, Attitudes About the Insurance Program, and Participation in Insurance on Welfare are detailed as follows.

Table 3. Effect of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance on Welfare

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	P Values
X1 -> Y2	0.437	0.438	0.019	0.000
X2 -> Y2	0.021	0.020	0.010	0.024
X3 -> Y2	0.715	0.716	0.017	0.034

Influence of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance towards Well-being. The significance value of the three variables is known: Knowledge of the Insurance Program = 0.000, significant towards Welfare with a p value smaller than α 10 percent (0.10). Based on this significance, Knowledge of Insurance Programs affects Welfare. The results of this study are in line with research conducted by Ardika, 2017, based on the results of his research knowledge has a significant effect on the level of welfare. Attitude About Insurance Program = 0.024, significant towards Prosperity with p value less than α 10 percent (0.10). Based on this significance, the Attitude About the Insurance Program, affect Welfare. Participation in Insurance = 0.034, significant for well-being with a p value less than α 10 percent. Based on this significance, Participation in Insurance influences Welfare. Thus, farmers 'knowledge, farmers' attitudes and farmers 'participation in the program play a

role in improving farmers' welfare. According to I Nyoman Raka, Pekaseh Subak Bergiding, stated: "A prosperous farmer is a farmer who is able to follow the direction of the field officer. Farmers tend to have low education, by following the direction of the officers will certainly be able to increase crop yields, so that welfare increases".

Productivity mediates the influence of Knowledge about Insurance Programs, Attitudes about Insurance Programs, and Participation in Insurance on Welfare

Based on the results of data processing, Indirect Effects of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance on Welfare through Productivity are detailed as follows.

Table 4. Indirect Effects of Knowledge About Insurance Programs, Attitudes about Insurance Programs, and Participation in Insurance on Welfare through productivity

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	P Values
X1 -> Y2	0.281	0.315	0.304	0.096
X2 -> Y2	0.013	0.013	0.007	0.080
X3 -> Y2	0.460	0.511	0.468	0.081

Productivity mediates the influence of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance for Well-being. The significance values of the three variables are known: Knowledge of the Insurance Program = 0.096, Attitudes About the Insurance Program = 0.080, and Participation in Insurance = 0.081, significant towards Welfare with a p value lower than α 10 percent (0.10). Based on this significance, Productivity mediates the influence of Knowledge about the Insurance Program, Attitudes About the Insurance Program, and Participation in Insurance on Prosperity. According to Anak Agung Prana, Field Extension Officers in Petang, stated that: "Through increasing productivity provided to farmers in the form of training provided to improve the welfare of farmers in Petang District, it has been well implemented, it is evident that farmers who apply theories in the training the production value tends to increase, it's just constrained in the sales process that is still facilitated by collectors. that is the weakness of farmers, they (farmers) sell their crops in the field, not harvested by farmers. If only the farmers who harvested and sold their grain were certainly higher prices. If sold in the field to collectors, they usually have to be good at negotiating with collectors.

CONCLUSION AND SUGGESTIONS

The average income of farmers in Petang District is Rp. 4,295,000, - each planting period or Rp. 1,431,341, - every month this certainly answers the research hypothesis that farmers' income is not comparable (lower) to the Minimum Work Wage (UMK) of Badung Regency in 2019, amounting to Rp 2,297,968, -; 2) Knowledge of the Insurance Program, Attitudes About the Insurance Program, Participation in the Program, Insurance affects the level of productivity; 3) Knowledge of the Insurance Program, Attitudes About the Insurance Program, and Participation in Insurance affect Welfare; 4) Productivity mediates the effect of Knowledge About Insurance Programs, Attitudes About Insurance Programs, and Participation in Insurance on Welfare.

Based on the research results, suggestions that can be given are as follows 1) It is expected that the government provides counseling and assistance related to the use of agricultural technology so that it can improve the welfare of farmers in Petang; 2) It is expected that the government provides counseling and assistance that is easier to understand related to terms and conditions both in the data collection process and in the claim process when there is a crop failure in the Agricultural Insurance Program, especially the Rice Farming Insurance Program. 3) Communication between farmers is needed in order to establish cooperation in the cultivation of agricultural land such as loose soil, planting seeds, pemumupak, spraying pesticides, harvesting, so that production costs that are usually used to hire workers from outside the area can be minimized and can reduce production costs. 4) Good coordination between farmers, the government and field officers is needed so that matters related to farming problems can be facilitated in efforts to improve farmers' welfare. Further studies are hoped to explore more variables or dimensions that can maximize the farmers' productivity and welfare, on the other hand it is also expected to widen the study location or giving longer study period to get the more comprehensive results.

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