

**ANALYSIS OF FARMER BEHAVIOR IN THE USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) ON PESTICIDE-USING FARMERS IN MELATI II VILLAGE, PERBAUNGAN DISTRICT, SERDANG BEDAGAI REGENCY**

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**Abstract**

**Background** Rice farmers in processing their crops certainly use pesticides, as an eradicator of various kinds of pests that can attack rice. Pesticides have greatly helped farmers in preventing crop failure due to pests. However, improper use of pesticides can endanger the health of farmers. To prevent this, farmers must use complete PPE when spraying rice. **The purpose:** of this study is to see what factors are related to the use of PPE in farmers who use pesticides, in farmers in Melati II Village in 2023. **Method:** This type of research is quantitative with a *cross-sectional approach*, the sample of this study amounted to 100 farmers. Data collection using interviews, questionnaires, and observation techniques. The data obtained is then processed with *chi-square statistical tests*. **Results:** Based on the results of bivariate statistical tests knowledge variables and action variables are related to the use of personal protective equipment (PPE). The results of the study showed that the variables related to the use of PPE were knowledge variables ( $p = 0.004$ ) and action variables ( $p = 0.043$ ). **Suggestion:** It is expected for the local government to provide knowledge to farmers in Melati II Village, regarding the importance of using personal protective equipment when spraying pesticides and the dangers of pesticides, to protect nature and also the health of farmers.

**Keywords:** Farmer, PPE, Pesticide

**INTRODUCTION**

In controlling pests and diseases that attack rice plants. Farmers using pesticides as a tool to eradicate is a common thing to do. But until now there are still many farmers who do not realize that the use of PPE when spraying pesticides is very important. In preventing the occurrence of chemical poisoning in pesticides. Many farmers think that using PPE makes them uncomfortable and slows down work. Not a few farmers claim that they are immune to the pungent smell of pesticides(Kolupe, 2020).

Yulisal (2018) conducted a study in Solok City, West Sumatra, obtaining results that farmers use pesticides because they are influenced by their knowledge, attitudes, and actions. Farmers use chemical pesticides because they are to eradicate pests that attack rice. Improper use of pesticides can negatively affect the health of farmers, if not using personal protective equipment properly. The activities of pesticide use by farmers start from spraying, preparation before spraying, applying pesticides, and washing equipment, and clothes. If you do not use good personal protective equipment, it can have an impact on your health, poisoning, skin irritation, and respiratory problems (Souisa & Claudya, 2019).

The use of pesticides that are not wise can cause various negative effects, one of which is poisoning. Pesticide poisoning in farmers is related to several factors from inside the body and from outside the body. These factors include the number of types of pesticides, pesticide doses, spraying time, the use of PPE, last contact with pesticides, actions in wind direction, and others (Hayati et al., 2018).

The World Health Organization (WHO) states that as many as 1-5 million cases of pesticide poisoning occur in the agricultural sector, and many cases occur in developing countries. As many as 20,000 lives are fatal due to the use of pesticides (Rasjid et al., 2019).

Rice farmers in Melati II Village who grow various types of rice ranging from serang rice, serang culek, Ir 64 rice, and serang blirek. Farmers spray 1 time before rice planters, and then approximately once a week spray pesticides to eradicate pests such as caterpillars, leafhoppers, javelins, sundep, green ladybugs, snails, and walang sangit which is carried out for 3 months. Melati II Village which has a population of 18,231 people with 4,827 families consisting of 23 hamlets. With a rice field area of 1,198, Ha and the number of jobs as farmers is 4,126 people (profile of Melati Village, 2022). The results of interviews with the heads of farmers and farmer groups, it was found that there are still many farmers who do not use personal protective equipment (PPE) when spraying pesticides on rice. Because they think that using personal protective equipment makes them uncomfortable, slowing down the work process. The purpose of this study was to see how the behavior of farmers in use (PPE) on farmers who use pesticides in Melati II Village.

## **METHOD**

This research is a quantitative research using a cross-sectional approach. Know the relationship between the dependent variable (knowledge and attitudes about PPE use) and the independent variable (action about PPE use). The research location will be carried out in Melati II Village on August 14-16, 2023. The population of this study was all rice farmers of Melati II village which amounted to 4,126 people, whereas the study sample amounted to 100 farmers.

The sampling method uses simple random sampling, and the inclusion criteria are farmers who are willing to be interviewed and use pesticides. The research methods used are observation and questionnaires. The data obtained is in the form of primary and secondary data. Data obtained through field observations and questionnaire surveys are presented in Excel format. Data analysis was carried out to facilitate the interpretation and testing of research hypotheses, using univariate analysis and bivariate analysis of the meaning level  $p < 0.05$  using the *Chi-Square test*.

## RESULT

Univariate analysis in this study contains the characteristics of respondents and the characteristics of research variables. The characteristics of respondents include age, gender, level of education, and occupation, while the characteristics of research variables include attitudes, knowledge, and actions. It can be seen in Tables 1 and 2 below.

**Table 1. Characteristics of respondents and research variables**

Characteristics of Respondents		N	%
Age Group (Years)	41-45	33	33
	46-50	28	28
	51-55	29	29
	56-60	10	10
<b>Total</b>		<b>100</b>	<b>100</b>
Gender	Law – Law	75	75
	Woman	25	25
<b>Total</b>		<b>100</b>	<b>100</b>
Education Level	No School	3	3
	SD	15	15
	SMP	21	21
	SMA	57	57
	SI	4	4
<b>Total</b>		<b>100</b>	<b>100</b>
Work	Farmer	92	92
	Wiraswasta	8	8
<b>Total</b>		<b>100</b>	<b>100</b>
Research Variables		N	%
Sikap	Positive		63
	Negative		37
<b>Total</b>		<b>100</b>	<b>100</b>
Knowledge	Good		75
	Not Good		25
<b>Total</b>		<b>100</b>	<b>100</b>
Action	Good		84
	Not Good		16
<b>Total</b>		<b>100</b>	<b>100</b>

In addition to univariate analysis, bivariate analysis is also carried out to see the relationship between the dependent variable and the independent variable. The results of the analysis are presented in Tables 2 – 3 below.

**Table 2. The relationship between the level of knowledge on the use of PPE in pesticide-using farmers in Melati II Village**

Knowledge	PPE Use Measures				Sum	P Value	OR
	Using PPE		Not Using PPE				
	N	%	N	%			
Good	68	68	7	7	75	75	0,004
Not Good	16	16	9	9	25	25	
<b>Total</b>	<b>84</b>	<b>84</b>	<b>16</b>	<b>16</b>	<b>100</b>	<b>100</b>	16,880)

Table 2 states that the largest percentage of good knowledge and using PPE is 68 respondents (68%). The smallest percentage of good knowledge but not using PPE was 7 respondents (7%). The results of the statistical test obtained a *p-value* = 0.004 which means a value of  $p < 0.005$ , then  $H_0$  is rejected which means that there is a relationship between knowledge and the use of PPE in farmers who use pesticides in Melati II Village in 2023. Based on the value of OR = 5.464 which means that poor knowledge is more at risk of 6,283 times negative attitude towards PPE users.

**Table 3. The relationship between actions on PPE use attitudes in pesticide-using farmers in Melati II Village**

Sikap	PPE Use Measures				Sum		P Value	OR
	Using PPE		Not Using PPE		N	%		
	N	%	N	%				
Good	57	57	6	6	63	63	0,043	3,519
Not Good	27	27	10	10	37	37		(1,159-
<b>Total</b>	<b>84</b>	<b>84</b>	<b>16</b>	<b>16</b>	<b>100</b>	<b>100</b>		10,686)

Table 3 states that the largest percentage of good actions and using PPE is 57 respondents (57%). While the smallest percentage of bad actions and the use of good PPE was 6 respondents (6%). The results of the statistical test obtained a value = 0.043 which means a value of  $p < 0.05$ , then  $H_0$  is rejected which means that there is a relationship between action and the use of PPE on farmers using pesticides in Melati II Village in 2023. Based on the value of OR = 3.519, which means that bad actions are more at risk of 3,510 times being negative towards PPE users.

## DISCUSSION

### The Relationship Between Knowledge Level and PPE Use in Pesticide User Farmers in Melati II Village

The questionnaire was used to measure farmers' knowledge of PPE use by farmers who used pesticides. A respondent's knowledge is said to be "good" if the total score obtained is >75% of the maximum number, and "bad" if the score obtained is <75%. Pesticides in Melati II Village. The result is a *p-value* of 0.004 ( $p < 0.05$ ) obtained by referring to the results of the chi-square test. There is a relationship between farmers' knowledge and the use of PPE because good knowledge can increase farmers' awareness of using PPE so that it can protect farmers from the risk of pesticide exposure.

The results of the survey on the use of personal protective equipment showed that out of 100 respondents, as many as 68 people (68%) had good knowledge and had used personal protective equipment. equipment at work. Danger if not wearing personal protective equipment. Nine (9%) respondents had low knowledge and did not use PPE. Respondents cited the lack of information media in the form of posters and other similar items around their residences as a guide to the use of PPE by agricultural extension workers or interested parties, although some respondents stated that they did not use PPE, thus giving reasons why they did not use PPE. incomplete use of PPE at work, that is, because the work is less dangerous.

Seven respondents (7%) have good knowledge but do not use PPE. Philosophically, respondents know what PPE is, but when viewed from the results, most respondents do not know it. This is because they only rely on personal experience as a source of knowledge at work, and most workers with work experience >15 years do not use PPE and do not suffer from serious diseases due to pesticide use. There were 16 respondents (16%) who lacked knowledge but used PPE. The respondent's theory can be said to be lacking, but when using PPE while working, respondents wear it completely. This happens because when there is a consultation on the use of PPE, farmers listen carefully so that it can be used as a reference for the use of PPE in the workplace.

Efforts that can be fulfilled to expand the knowledge and understanding of farmers to better understand the use of PPE, especially about the impact of harm that can be caused by pesticides if they do not wear personal protective equipment (PPE) is by conducting counseling on how to use personal protective equipment (PPE) properly and correctly, such as masks, hats, gloves, long sleeves, trousers and boots and the dangers of not using personal protective equipment and it is also important to install posters about PPE on farmers that must be used which aims to remind farmers and increase farmers' awareness of the importance of occupational safety and health (Hasanah, Nuruls., Entianopas., & Listiawaty, 2022).

According to Notoatmodjo (2018), knowledge is the result of knowing a person about objects through the senses he has. Individual knowledge of an object contains two aspects, namely the positive aspect and the negative aspect. The existence of positive aspects and negative aspects can determine individual attitudes in behavior and if more positive aspects and objects are known to cause positive behavior toward certain objects (Sinaga, 2021). What is meant by knowledge in this study includes all information understood by farmers about the use of PPE that must be used when spraying pesticides (Retnani Wismaningsih & Ias Oktaviasari, 2017).

The manifestation of the use of PPE was found not by their knowledge or with standards where the knowledge of farmers was quite good but the application was not good. The use of PPE is also not by the knowledge of farmers because personal protective equipment (PPE) is more widely used only when spraying and very rarely when mixing and after spraying even though the potential for exposure to pesticides is very high (Minaka et al., 2016).

From the interview data of farmers in Melati II village, it can be seen that farmers lack good awareness and concern for their health, and are less concerned about the importance of using personal protective equipment while working.

### **The Relationship Between Action and PPE Users on Pesticide User Farmers in Melati II Village**

The questionnaire was used to measure farmers' knowledge of PPE use by farmers who used pesticides. Respondents' behavior is classified as "good" if the total score obtained is in the range of 75% – 100%, and "bad" if the total score obtained is <75%.

The findings show a relationship between the actions of farmers using pesticides and the use of personal protective equipment in Melati II Village. This is based on the chi-square test with a p-value of 0.043 ( $p < 0.05$ ). There is a relationship between behavior and the use of PPE because a person behaves if he has a good attitude in responding to the use of PPE.

The results of research on actions against the use of PPE showed that out of 100 respondents who had good actions and used PPE, 57 respondents (57%) because respondents prevented diseases caused by pesticides. Of respondents who have less action and do not use PPE as many as 10 respondents (10%) This is because respondents are only comfortable with wearing modest PPE while working.

Respondents who had good actions but did not use PPE were 27 respondents (27%). The reason they do not use PPE is that respondents think that when wearing PPE at work greatly limits movement, interferes, and hinders work. The use of PPE such as masks is very rarely used when doing work because they claim that when they wear masks it will be difficult to breathe and they only wear clothes that make them comfortable such as long sleeves and trousers for the reason that they avoid sun exposure not from the dangers of pesticides. While respondents have bad actions but use PPE as many as 6 respondents (6%) because according to respondents, PPE is the most important protection when working.

To prevent adverse effects caused by pesticides, it is very important to have preventive efforts on farmers, especially for farmers who work with pesticide exposure. One of the efforts made is to wear PPE. The use of PPE can avoid the emergence of occupational diseases. Therefore, it is necessary to carry out roles and efforts that must be carried out both by entrepreneurs in providing PPE appropriately and completely and by rice farmers who come into direct contact with pesticides to avoid the dangers of pesticides (Sahuri & Sahna, 2021)

According to the Occupational Safety and Health Association, personal protective equipment is defined as a tool used to protect workers from injury or disease caused by contact with hazards in the workplace, chemical, biological, radiation, physical, electrical, and others.

In the results of interview data and observations on farmers who use pesticides in Melati II Village, it can be seen that farmers spray pesticides only based on their own experience and most also have a less compliant attitude towards the use of PPE.

## **CONCLUSION**

Based on the results of research and observations made, this study concludes that there is a relationship between knowledge and action with the use of PPE on pesticide-using farmers in Melati II Village.

## **Suggestion**

It is expected that the local government will provide knowledge to farmers in Melati II Village, regarding the importance of using personal protective equipment when spraying pesticides and the dangers of pesticides, to protect nature and also the health of farmers.

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