



The Relationship of Knowledge, Attitudes, and Actions with the Completeness of the Use of Personal Protective Equipment (PPE) in Farmers Insecticide

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Abstract: The use of pesticides by farmers on plants that are not by established rules and do not use proper Personal Protective Equipment (PPE) can cause various kinds of health complaints to farmers and pollute the environment. The behavior of farmers in the use of self-protective equipment when musing and spraying pesticides are very important for farmers. The research objective is to determine farmers' knowledge, attitudes, and actions in using self-protective equipment during compounding and spraying pesticides. This type of research is descriptive (descriptive research), primary data is obtained through direct observation using questionnaires, and secondary data is obtained from Wali Nagari. The research population was conducted on all onion farmers with a total sampling technique of 52 samples. Data were analyzed by univariate. The results of the study are known that the level of knowledge of onion farmers in Kanagarian Alahan Panjang is quite good, reaching 67.3%, the attitude of farmers is good, reaching 94.2%, and the actions of farmers towards the use of pesticides and PPE are not good because of the 52 repetitions only 1.9% who have good action and 55.8% who use PPE completely.

Keywords: Knowledge; Attitudes; Actions; Farmers; Personal protective equipment; PPE

Introduction

The number of workers in the agricultural sector in 2020 reached 33.40 million farmers or 29.76% of the total number of workers in Indonesia (B.P.S., 2020). West Sumatra's population amounted to 5.64.629 inhabitants, scattered in Kabuten Solok 397.829 inhabitants. Solok Regency is seeded as a center for crops, especially vegetable plants. In 2020, the production of several types of crops such as cabbage reached 156.634.90, 138.914.90 tons of shallots, 62.620.80 tomatoes, 32.474.50 large chili Onion of leaves as many as 8,898.80 tons (B.P.S., 2022). Farmers are the largest working group of the labor force in Indonesia (B.P.S., 2020). The success of farmers is strongly supported by education, knowledge, and attitudes about agriculture. Agricultural development will run well if supported by quality human resources (HR) as the output (output) of education development. A benchmark for quality human beings is a high level of education (Alkadri et al., 2001). A person's education level will affect his behavior. The behavior of farmers

with a high level of education is expected to be better than farmers with a low level of education (Munib et al., 2004).

Education is a conscious and planned effort carried out by families, schools or communities that aims to instill knowledge, skills and the formation of personality traits that can create generations that are competitive, intellectually intelligent and spiritually pious (Sholichah, 2018). In farmers' behavior, knowledge is one component that is also a factor in the adoption of innovation. The level of knowledge affects farmers in adopting new technology and the progress of their farming business. In adopting renewal or change, farmers need knowledge of theoretical aspects and practical knowledge (Bahua, 2016). The important role of science is seen in helping humans to make decisions and actions as well as providing solutions for humans in dealing with various problems and problems in their lives (Paulus, 2007).

The level of community education has a positive effect on community behavior in land management

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(Suwarno et al., 2014). The results showed that non-formal education includes factors that influence the attitude of farmers in Sukoharjo Regency (Ayu A et al., 2020), knowledge also has a significant relationship with the attitude of farmers towards the use of Personal Protective Equipment (PPE) in Sialang Panjang Village, Tembilihan Hulu District (Indrawati, 2017), knowledge has a significant relationship with the use of PPE in spraying workers at PT. RKK Mekar Sari Village, Kumpeh District, Muaro Jambi Regency (Entianopa et al., 2016), significant relationships between knowledge, attitudes, and availability of PPE with the behavior of the use of PPE are also found in pesticide spray farmers at the Paal Merah II Puskesmas Post in 2021 (Hasanah et al., 2022). Farmers' knowledge that is low in handling the remaining pesticides after spraying pesticides can affect the level of pesticide poisoning farmers Jannah (2022), but in farmers who use pesticides in Sigambir Village, Brebes District, Brebes Regency, knowledge and attitudes indicate an insignificant relationship with the practice of using protective equipment Self (Aeni et al., 2018).

Personal protective equipment is a completeness that must be used when working according to the dangers and work risks to maintain the safety of workers themselves and those around them. The equipment functions as a barrier between labor and hazard so that the amount of contact with hazards is reduced. The use of PPE at work is an effort to avoid exposure to hazardous risks at work (Suma'mur, 2014). PPE provides effective protection to farmers from potential hazards, preventing and reducing the severity of disease due to pesticide users (Tarwaka, 2014). Personal Protective Equipment aims to reduce the severity of workers being exposed to various hazards in the workplace. Although this effort is at the last level of prevention, the application of this personal protective equipment is highly recommended (Arifin, 2009), but a common phenomenon is seen in farmers in Nagari Alahan Panjang, Lembah Gumanti District, Solok Regency in working to spray pesticides do not use protective equipment self.

Regarding the Fenmonona related to the knowledge, attitudes, and actions of farmers, this research specifically is intended to determine the relationship of knowledge, attitudes, and actions towards the behavior of the use of PPE in farmers user Nagari Alahan Panjang pesticide, Lembah Gumanti District, Solok Regency. It is hoped that the results of this study can be useful for policymakers to help save farmers from insecticide exposure.

Method

The study was conducted at Kanagarian Alahan Panjang, Lembah Gumanti District, Solok Regency from

March to June 2022, using a qualitative descriptive survey method. Data related to knowledge, attitudes, and actions are used in a modified Qususary from Manalu (2019) using a cross-sectional approach to know knowledge, attitudes, and actions in the use of PPE in onion farmers in Kanagarian Alahan Panjang.

This study's population was the Kanagarian Alahan Panjang population with the main job as a shallot farmer. Sampling was carried out by an exhibition method with a period of 30 days. As a criterion of farmers who are used as samples found while spraying insecticides in onion plantations. Farmers who are spraying are asked to be their willingness to be research respondents, for farmers who are willing to be taken by their documents and agreed upon time for filling out questionnaires. As many as 13 farmers are not willing to be respondents so they are not made documentation but are counted as members of the onion farmer population. A total of 24 questionnaires were carried out in the garden when farmers rested and 28 questionnaires in their respective farmers' residences. The total population of onion farmers found for 15 days is 65 farmers who are willing as a sample of 52 respondents.

The questionnaire used to collect data consists of three lumps, namely knowledge, attitudes, and actions with 10 questions related to the use of PPE in using pesticides. The types of personal protective equipment observed are hats, glasses, masks, long-sleeved clothes, gloves, trousers, and boots. data, respondents found in the field. In giving a score, each type of personal protective equipment is given a value of 1 so that the maximum value for personal protective devices (Y) is 7.0. For data processing through the inspection stage, coding, data tabulation (data presented in the table), and the data preparation stage. Knowledge (X1), attitudes (X2), and Actions (X3) are expressed in the percentage (%) Arikunto (2010) with three categories based on the percentage value namely a) Good ($\geq 76-100\%$), b) sufficient (60-75 %) and c) are less ($\leq 60\%$) while for the complete use of personal protective equipment in a complete category ($\geq 76-100\%$), b) sufficient (60-75%) and c) are less ($\leq 60\%$). For data analysis, multiple regression is used (Ghodang et al., 2020). All data processing is used using a computer.

Result and Discussion

The results of the category of onion farmers who have knowledge, attitudes, and actions and completeness using PPE in spraying insecticides in Kanagarian Alahan Panjang, Lembah Gumanti District, Solok Regency (Table 1).

Table 1. Categories of Knowledge, Attitudes, Actions, and Completeness of the Use of PPE

Parameter	Category (%)			Total (%)
	Good	Enough	Less	
Knowledge (X1)	67.30	19.20	13.50	100
Attitude (x2)	94.20	3.80	1.90	100
Action (x3)	1.90	53.80	44.20	100
Completeness of PPE (Y)	0	0	100	100
Amount	163.40	76.80	159.60	400
Average	40.85	19.20	39.86	100

Farmers who have a good category of 94.20% and as many as 67.30% have knowledge in the good category but inversely proportional to the number of farmers who have the completeness of personal protection equipment used when spraying which is 0% (less category). Attitude is a reaction or response that is still closed by a person to a stimulus or object. Attitudes have three components, namely, a) beliefs (beliefs), ideas, and concepts of a stimulus object. b) Emotional life or evaluation of an object. c) The tendency to act (Sumantri, 2015).

Attitude is a reflection of impulses that come from within a person and a reaction to the stimulus that comes from the environment and the tendency of someone to behave (Palupi et al., 2017). Shallot farmers in Cirebon Regency show behavior using pesticides 31.82% of respondents use pesticides according to the recommended dosage and nearly 70% of other respondents use pesticides exceeding the dose. Use exceeds the dose caused by pests that attack resistant onion plants. So that the results are optimal and pests of the disease quickly disappear, the dose of pesticides must be exaggerated. In addition to exceeding the recommended dose, almost 80% of respondents mixed two or more brands/types of pesticides in one tank (Darwis et al., 2021) about the behavior of farmers in the use of pesticides in the cultivation of shallots in Cirebon Regency. The results of the level of knowledge, attitudes, and actions and completeness of the use of PPE in onion farmers in Kanagarian Alahan Panjang, Lembah District (Table 2).

Average attitude (95.00) and knowledge (83.00) related to the use of PPE in spraying insecticides on onion farmers are good, but the average action (55.60) and complete Spraying of insecticides are still lacking. Lack of average actions and completeness of the use of personal protective equipment in spraying insecticides, because in taking actions farmers consider many factors that are closely related to the availability of personal protective equipment and related to farmers' finances. Referring to Shinta (2011) that attitude plays an important role in shaping behavior. Attitudes put someone into a mind to like and dislike something, moving approaching or away from something. There is a tendency to assume that attitude is the right factor to

predict future behavior. So, by studying attitudes, someone is expected to determine what will be done.

Table 2. The Average Level of Knowledge, Attitudes, and Actions as Well as the Completeness of the Use of PPE

Parameter	Respondent	Average	Category
Knowledge (X1)	52	83.00	Good
Attitude (x2)	52	95.00	Good
Action (x3)	52	55.60	Less
Completeness of PPE (Y)	52	35.70	Less

The results of the output regression of knowledge, attitudes, actions, and completeness of the use of PPE in onion farmers in Kanagarian Alahan Panjang, Lembah Gumanti District, Solok Regency (Table 3).

Table 3. The Result of the Output Regression of Knowledge, Attitudes, Actions, and Completeness of the Use of PPE

Regression Statistics	
Multiple R	0.249318
R Square	0.062159
Adjusted R Square	0.023880
Standard Error	1.180626
Observations	52

Table 3, shows a weak relationship ($R^2 = 0.249$). The magnitude of the confession R shows the level of the linear relationship between the completeness of the use of the PPE (dependent variable) with the knowledge, attitudes, and actions of farmers (three independent variables) together. From the coefficient R^2 (Multiple Determination coefficient) it can be seen that the total variation in the dependent variable to explain by the independent variable is only 6.21% while 93.79% is determined by other factors. The weak relationship between the three factors of knowledge, attitudes, and actions of farmers is determined by the availability of PPE owned by farmers. In this case, farmers' actions for the procurement of PPE are also low so the type of PPE owned is limited (Table 1). The limitations of the type of PPE owned cause compliance in the use of PPE are also limited, such as from 10 types of recommended PPE, only 6 PPE owned by farmers. Types of PPE that are not owned by all farmers (respondents) are glasses and gloves. Conditions like this are also the same as Macfarlane et al (2013) that farmers 'compliance with using PPE is still very low because farmers' compliance with PPE by the standards will have an impact on the economy of farmers.

The results of knowledge, attitudes, and actions with the completeness of the use of PPE in shallots farmers in Kanagarian Alahan Panjang, Lembah Gumanti District, Solok Regency (Table 4).

Table 4. Results of Knowledge, Attitudes, and Actions with Complete Use of PPE

Source of variation	Degree of Freedom	Sum of Square	Mean of Square	F	Significance F
Regression	3	12.081819	4.027273	13.230844	0.000002
Residual	48	14.610489	0.304385		
Total	51	26.692308			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.780927	0.798476	2.230408	0.030430	0.175484	3.386371
X1	0.110256	0.044542	2.475326	0.016894	0.020698	0.199814
X2	-0.102145	0.087358	-1.169274	0.248067	-0.277790	0.073499
X3	0.333651	0.066758	4.997944	0.000008	0.199426	0.467876

X1 = knowledge, X2 = attitude and X3 = action

Table 4 shows a significant relationship at the 5% significance level, in that case, the three components (knowledge, attitudes, and actions) simultaneously influence shallot farmers to equip PPE in spraying insecticides. The results of this study are to the findings of Indrawati (2017), that knowledge and attitudes have a significant relationship with the use of PPE among farmers in Sialang Panjang Village, Tembilahan Hulu District. However, it is different from the findings of Aeni et al. (2018) that there is no relationship between knowledge and attitudes regarding the practice of using PPE among farmers who use pesticides in Sigambir Village, Brebes District and the findings of Rachman et al. (2020) at PT. Sarandi Karya Nugraha Sukabumi, that respondents have a high level of knowledge about PPE, but there is no relationship between knowledge,

attitudes, income, environment, and education with the behavior of using PPE.

The relationship between knowledge, attitudes, and actions with the completeness of the use of personal protective equipment for shallot farmers in the Kanagarian Alahan Panjang in multi-regression has a negative value so the attitude of farmers gives less value. While the other two components are knowledge and provide support for completeness in the use of PPE, for knowledge of 0.1102 and action of 0.3336. In this case, it can be seen that high knowledge and good attitudes are not in line with the actions of farmers in using PPE correctly and appropriately, only 3.80% wear protective glasses but are not used to protect their eyes, only 1.90% wear shoes and some farmers do not use hats, masks, shirts with long sleeves, trousers and gloves.



Figure 1. Condition for using personal protective equipment on shallot farmers a. The farmer without gloves and a hat dissolving insecticide; b and c. Farmers without sarongs spraying insecticides; d. Farmers without masks and gloves are spraying insecticides.

Of the three components, the action coefficient has a greater contribution to shallot farmers in complying with the completeness and use of PPE. Farmers' actions related to compliance with the use of PPE are directly related to the type and amount of PPE owned by farmers according to standards. The more complete the types and the greater the number of PPE that farmers must have, the more knowledge and attitude considerations become a supporting factor (6.22%) compared to consideration of other factors (93.78%) such as cultural, social, personal, and psychological factors to take action

in procuring PPE. Referring to Kotler et al. (2007) that four factors can influence consumers to make decisions in buying a product, namely cultural, social, personal, and psychological factors. Firmansyah (2018) describes the four factors, namely, a) cultural factors including culture, sub-culture and social class, b) social factors including reference groups, family, roles, and status, c) personal factors, including age, occupation, circumstances economics, lifestyle, personality, and self-concept and psychological factors include motivation, perception, learning process, beliefs, and attitudes.

Conclusion

The number of shallot farmers in Kanagarian Alahan Panjang, Lembah Gumanti District, Solok Regency was 94.20% who had a good attitude, 67.30% had good knowledge, and farmers who had complete (knowledge, attitudes, and actions) simultaneously influence shallot farmers to complete PPE and comply with the use of PPE in spraying insecticides significantly. Regarding the findings, it shows that action is very decisive for the completeness of PPE owned by farmers. PPE is used when spraying, namely 0% (poor category). The average level of knowledge and attitudes of farmers regarding the use of PPE in spraying insecticides is already good for the use of PPE is still lacking.

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