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Analysis of Vegetable Farmers' Behavior in the Application of Pesticides in Leafy Vegetable Cultivation *(Case in Subdistrict East Sepatan, Tangerang Regency)*

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ABSTRACT

This study aims to describe the characteristics of leafy vegetable farmers and determine the dominant factors that influence farmer behavior in the use of pesticides in vegetable farming. The study was conducted in Sepatan District, Tangerang Regency, Banten with 85 randomly selected vegetable farmers as respondents. Data collection through questionnaires and interviews and direct observation at the research location. The results showed that most (85.7%) respondents had low to moderate levels of behavior, and 14.3% of respondents had high levels of behavior. Access to information for each respondent had a Loading Factor of 0.56 and 0.48 or 56% and 48%. While market support was dominated by market networks and prevailing prices with Loading Factors of 0.76 and 0.75, respectively. Farmer behavior in the use of pesticides was influenced by respondent characteristics and market support with an R value of 0.58 or 58% while the rest was influenced by other factors. Farmer behavior in the use of pesticides was determined by the level of knowledge, attitude and skills, with each factor value of 0.60; 0.52 and 0.62.

Keywords: Behavior; Farmer; Pesticide Application; West Sepatan; Tangerang; Vegetables

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1. Introduction

Tangerang Regency is functioning as buffer area for the National Capital. In addition to the sector industry and services, sector agriculture still gives portion income sufficient population big. Government central and regional continue to encourage forward development agriculture sector through various activities, including improvement of the facilities: irrigation, infrastructure rural area, as well as research and extension agriculture, which has help farmer in increase production and income farmer in a way real and sustainable. However, in the business of all farmers activities, it is found that the chemicals used, good fertilizers, and pesticides, tends to have increased. It was expected that all of the can increase the result in production per unit area, regardless of the level od residue produced by the chemical[1].

Sepatan is able to provide for its citizens' food needs in addition to serving as a buffer area for Tangerang Regency's capital city. Because of the geography, this region has a lot of opportunities to provide the capital city with food. This occurs as a result of the society's average quality of living rising.

The potential development agriculture in Tangerang Regency, for the last five years. The paddy fields are still occupying priority main, then horticulture. The first priority remained paddy fields, followed by horticulture. The green leafy vegetable such as kale, spinach, mustard green, and others are the mainstays of this sector. Other exist long beans, cucumber, *Water Spinach*, and pumpkins are typically lowland horticulture corps as seen in **Tables 1** and **2**.

Table 1. Harvested Area, Productivity and Vegetable Production Based on Plant Type in Tangerang Regency in 2022.

	Types of Plants	Harvest Area (Hect)	Productivity (Qui/Hect)	Production (Tons)
1.	Long Beans/Yard Long Beans	285	32.253	9.192
2.	Spinach	513	37.107	19,036
3.	Eggplant	59	15,712	927
4.	Cucumber	396	44,826	17,751
5.	Swamp cabbage	609	54,366	33.109
6.	Mustard Green	330	55,755	18,399
7.	*Water Spinach*	847	41 435	33 342
8.	big chili	10	5,000	50
9.	Cayenne pepper	7	2,000	14

Source: Tangerang in figures 2023.

Table 2. Development of Vegetable Production in the Last Five Years in Tangerang Regency.

NO	Types of Plants	Production (Kw/Ha)				
		2017	2018	2019	2020	2021
1	Spinach	29 388	32 834	28 144	29 346	26 898
2	Swamp cabbage	25 832	32 298	42 486	41 435	33 342
3	Chinese cabbage/green mustard	18 337	22 705	19 821	10 068	8 587
4	Long beans	8 547	10 271	13 334	11,949	14 225
5	Chili/Big chili	1,838	2 792,	2 561	5 152	537
6	Cayenne pepper	2 385	3 304	3 676	1 830	706
7	Cucumber	16 798	9 337	18 061	18,997	19 743

Source: Tangerang in figures 2023.

However, the process is still carried out manually and traditional. Experience and habits are the main element in farming business management. There leafy vegetables have a fairly high risk such as added value produced both of economically and socially. If managed properly, it will produce good results. Besides to providing high economic value for farmers, vegetable farming also capable to provide business opportunities for some of the surrounding people.

Generally, leafy vegetable farmers in Tangerang Regency carry out monoculture farming and already did it for a long period of time. As a result, several serious

physical and biological problems arise in the agroecosystem, such as the occurrence of salinity on land that is plowed in wet condition, decreasing soil carrying capacity, increasing pest and disease attacks, and decreasing soil fertility due to drought[2], continuous planting also causes a continuous impact of nutrient content on the land, such as reducing the composition of food content products as the main source of protein, minerals, and vitamins[3, 4].

This ccondition has given rise to a new habit in running farming where leafy vegetable farmers are more dominant in using chemical-derived materials, both fertilizers and pesticides with reactive effects that are quickly visible and easy to apply[5].

Vegetables are a need of the body that sought in the food we eat every day. Because it contains vitamins, minerals, and fiber. All of them are very important for human health. Vegetable also can help avoid diseases such as dyslipidemia, cardiac disease, diabetes, and constipation[6]. Vegetable can be cultivated year-round using the yard as farmland, resulting in great economic benefits, job creation, and increased income[7].

In line with the growth of the population both of birth and migration, the opportunity for vegetable farming in Tangerang Regency will increase in 2022 recorded at 16.22% of the total land used for vegetable farming[8].

The vegetable production has increased five-fold in the last five years. Tangerang Regency managed to score the 3rd rank in vegetable production in the Greater Tangerang Area. The farmers earn a huge income from the production of vegetables that have changed their lives[7].

The vegetable cultivation in Tangerang Regency, takes place all year round. Most types of vegetables such as sweet pumpkin, white pumpkin, snake pumpkin, bitter melon, cucumber and other are popular plants in farmer community. Beside leafy vegetables such as kale, spinach, green mustard, and so on are the types of vegetables consumed in Tangerang Regency.

The vegetable farmers, especially smallholders, face many obstacles in vegetable production. High production risk mainly arise from large production losses caused by pests. It was estimated that about 30% of the total vegetable production falls into this category[9]. There were several pests that attack vegetables, especially leafy vegetable. Including leaf moths, aphids, thrips, armyworms, cutter caterpillars, cabbage caterpillars, browns beetles, horn caterpillars, green leafhoppers, spider, stems borers, root knot nematodes, etc.[9, 10].

Pest control, carried out by vegetables farmers used pesticides in high quantity. There were many more negative impacts from the use of pesticides in high doses. Among them is the destruction of ecological balance such as the destruction of natural ecosystems. It is even worse if there is water and soil pollution that results in disruption of aquatic life such fishes. Both fish in the rivers, swamps, ponds and other. This shows that the use of harmful pesticides is not justified because it will damage the environment and ultimately also endanger human health.

Beside of the dangerous used of pesticides, excessive use of chemical fertilizer will always reduce the ability to conserve water and soil[11, 12]. Pesticide and fertilizer waste also cause microbial degradation in the soil[10]. Considering that farmers were the main users of pesticides, it was necessary to know their behavior regarding the use of pesticides.

The use of pesticides with excessive dosages can pose a threat to agricultural ecology and also to the human body. Vegetable farmers are urged to use pesticides wisely and maintain the ecosystem to reduce environmental issues[10, 13]. Therefore, the aim of this research is to understand farmers' behavior regarding the use of pesticides in leafy vegetable farming.

Behavior includes all human actions or activities that can be observed directly[13]. Behavior arises based on perceptions of something. Farmers' behavior in managing farming businesses, especially leafy vegetables, still relies on conventional farming methods because they are considered easier and faster. This behavioral pattern is often inherited from previous generations, and only a few farmers are willing to try to switch to sustainability-oriented farming. Farmers' behavior in running vegetable farming uses 3 domains, namely knowledge, attitudes, and skills. Farmer behavior is identified to determine the competence of farmers in the East Sepatan sub-district in cultivating leafy vegetables.

Behavior is understood as an action taken by a person to achieve a certain expected goal therefore behavior is not formed just like that without planning and awareness of a goal to be achieved[13]. Based on this understanding, it can be concluded that behavior is an action or reaction of a person (farmer) to existing stimuli, with the aim of achieving the expected results.

The low farmer behavior (knowledge, attitudes and skills) of leafy vegetable farmers towards chemical pesticides results in excessive pesticide use, where farmers still believe about good vegetables are those free from insect attacks without considering the residues beft behind[14]. The excessive use of pesticides is more prevalent among vegetable farmers compared to other food crop farmers. One form of agricultural product quality management policy is the legal regulation of food safety through the establishment of maximum residue limits for pesticides on agricultural product[3].

The wise use of pesticides is a form of our concern for environmental sustainability and global stability. Therefore, consumers should consider consuming organic food, as excessive pesticide use results in residues on food that are far more dangerous than people think. Another objective of this research is to determine (1) the characteristics of leafy vegetable farmers; (2) to understand the behavior of vegetable farmers towards pesticide use in vegetable farming; and (3). To identify the factors that significantly influence vegetable farmers behavior in using pesticides in vegetable farming.

2. Research Methodology

This study carried out in East Sepatan District, Tangerang Regency. As the center vegetable production in Tangerang Regency. Its located in ten sub-district namely East Sepatan, Teluk Naga, Sepatan, Pakuhaji, Rajeg, Pasar Kemis, Cikupa, Mauk and Kemeri. East Sepatan is located in north of Tangerang Regency. The respondents were taken from three center vegetable village namely Gempol Sari village, Sangiang village, and Pondok Kelor village. The three villages are located Tangerang Regency Agropolitan development region.

The methods use in this study is qualitative method. This aims to exploring and understanding social problems[15]. Beside to provide the detail about the phenomena were difficult to describe by quantitative method[16]. By using a study case approach, the object of research will be focus on the behavior of vegetable farmers in using pesticide on leafy vegetable crops as closely examined. The respondents in this study involved 85 leafy vegetable farmers who were selected based on random sampling.

The data collecting type was primary and secondary data. Primary data were collected through interviews using questionnaires, in-depth interviews, observations and documentation studies. The data consists of respondent characteristics (ξ_1) (formal education, vegetable farming experience, land ownership area, vegetable farming land area, income outside of agriculture, income from vegetable farming, acces to information, involvement in organizations, and time allocation for vegetable farming); Market support (ξ_2) (market networks, market access, commodity price); Farmer behavior (η_1) measured through indicators (knowledge, skills, and attitude)

The research variables were measured using a Likert scale, namely "1 = never, 2 = sometimes, 3 = often, 4 = always", while the variable behavior measured using a Likert scale, namely "1 = disagree, 2 = less agree, 3 = agree and 4 = strongly agree".

The score value of each variable is transformed with an index of 0 to 100 according to the resulting score values, such as in the indicators of farming experience, land ownership area, income level, and involvement in organizations. This data is ordinal data. The transformation process is carried out in stages (ordinal scale) according to the distribution of the research data. Referring to Sumardjo in[17], the data transformation guidelines can be carried out by determining the Smallest Index Value for the lowest score and the Largest Index Value for the highest total score on each indicator. The general transformation formula used is as follows:

$$Transformators\ Indek = \frac{TSA - TSmin}{TSmax - Tsmin} \times 100 \tag{1}$$

Notes:

TSA = Total Score Achieved

TSMin = Total Minimum Score

TSMax = Maximum Total Score

Ordinal scale indicators are measured based on the choices and perceptions of respondents, with score gradations used from the most negative to the most positive. Score 1 is used for the most negative responses and sore 4 for the most positive responses. Data analysis was conducted descriptively and inferentially. Descriptive analysis is used to calculate the average and standard deviation of each research variable. One-way ANOVA analysis is used to analyze the level of homogeneity of the research variables. Meanwhile the *Structural Equation Model* (SEM) analysis is used to analyze the influence od variables on farmers' behavior in the application of pesticides.

3. Results and Discussion

3.1. Characteristics of Leafy Vegetables Farmers

The data in **Table 3** provides an overview of the characteristics of leafy vegetable farmers. that most vegetable farmers in East Sepatan District have an average age of 54 years, which proves to be part of an aging population. Most of the respondents are aged between 51 and 60 years (44,66%), followed by respondents aged over 60 years (33,97%). Based on the table, it is also evident that the majority of farmers are over 51 years old, which is 75,3%. Other reports[18–20] state that the aging of farmers is a common phenomenon throughout Indonesia. With an average education level of 6.2 years or equivalent to completing elementary school.

Table 3. Responden Carakteristices Leaf Vegetables Farmers in East Sepatan District.

Variables Measured	Existing	Farmer			Means	SD
		Category	Quantity	%		
1) Age (years)	54–66 years	<40	6	7.1	54	6.53
		40–50	15	17.6		
		51–60	39	45.9		
		>60	25	29.4		
		Total	85	100		
2) Education Level (years)	0–12 years	<4 years (Very Low)	15	17.6	6.2	3.61
		4–6 Years (Low)	25	29.4		
		7–9 Years (Medium)	36	42.4		
		>9 years (Tall)	9	10.6		
		Total	85	100		
3) Business Area	0.09–4.0 Ha	(<0.1) (Very Low)	9	10.6	0.65	0.56
		0.1–05 (Low)	47	55.3		
		0.5–1 Ha (Medium)	21	24.7		
		>1 Ha (height)	8	9.4		
		Total	85	100		
4) Leafy Vegetable Land Area	0.01–2.0 Ha	<0.1 Ha (Low)	12	14.1	0.43	0.45
		0.15–0.5 Ha (Medium)	54	63.5		
		<0.5 Ha (Height)	19	22.4		
		Total	85	100		
5) Income outside business	1–7 million	<1 million (Low)	9	10.6	1.75	2.47
		1–2 million (Medium)	59	69.4		
		>2 million (High)	17	20		
		Total	85	100		
6) Income from agriculture vegetables	0.5–4.5 million	<0.5 million (Low)	13	15.3	0.75	0.56
		0.5–1.5 Million (Medium)	55	64.7		
		>1.5 million (High)	17	20		
		Total	85	100		
7) Access to information counseling	1–12 times	<3 Times (Low)	23	27	4.2	6.72
		4–6 times (Medium)	47	55.3		
		>7 times (High)	15	17.7		
		Total	85	100		
8) Time spent on vegetables farming (weekly working hours)	7–40 Hours	<15 hours (Low)	4	4.7	16.5	3.64
		15–30 Hours (Medium)	56	65.9		
		>30 hours (High)	25	29.4		
		Total	85	100		

Table 3 shows that the majority of farmers (42.4%) have a secondary education level, while those with an elementary education level to (10,6%). There are still farmers in East Sepatan Distric whit low education levels or who did not complete elementary school, which is (17,6%). The low-level education among farmers will result in less effective absorption of workers [21–24].

In terms of land ownership for farming, the majority (55,3%) farmers have small plots of land. However, among vegetable farmers, there are some who have medium and large plots of land. Of the land controlled by farmers, not all of it is used for vegetable cultivation. Most farmers managing vegetable farming land have areas of less than 0.5 Hect. (77,6%) because vegetable farming is more profitable compared to rice farming. In the fact, there are some farmers interested in running vegetable farming on larger plots of land, as shown in **Table 3**.

In term of farmers received income, the majority of farmers have an income level between 1–2 million rupiah (69,4%). Meanwhile the rest earn less than 1 million rupiah. **Table 3**. also explains that most vegetable farmers have a fairly good income, which is 0.5–1.5 million rupiah, amounting to 55.6%, and there are even farmers who are able to generate an income of more than 1.5 million rupiah per season.

In accessing source information, in general farmers in the District East Sepatan is District are quite good and open to seeking information. Whether obtained from extension workers or from social media, such as WhatsApp, YouTube, Instagram, and other media that help the success of vegetable farming. This can be seen in **Table 3** where the majority of respondents have utilized the information network in the moderate category, amounting to 55,3% and some have maximally utilized information resources for the advancement of their farming businesses. The support and extension services in efforts to enhance farmers' capacities, especially in seeking and utilizing information are inseparable parts of developing their businesses, which ultimately leads to better farming practices.

The most vegetable farmers in the research location are still not interested in further joining other groups or organizations, as evidenced by the low level or farmer involvement in organizations will disrupt their farming activities, so it is sufficient for each group to be represented by their respective leaders, and they will only gain benefits. The success of vegetable farming, especially leafy vegetables, is greatly influenced by how well the farmers manage their farms resulting in better productivity.

3.2. Market Support

The success of vegetable farming is also closely related to how farmers utilize market support. In general, farmers have mastered the market network, with 45.9% of farmers being able to determine where they will sell their production independently. The patronage or middleman system has begun to be abandoned, but there are still a small number of farmers who are dependent on patronage, especially in terms of providing capital through payment for their harvest. **Table 4** shows that farmers have generally utilized market mechanisms in marketing their farming products.

Table 4. Percentage of farmers' perception towards market support for agricultural products.

Indicator	Category	Respondents		Average	SD
		Quantity	%		
Market Network	1. Low	25	29.4	65.8	5.5
	2. At the moment	21	24.7		
	3. Tall	39	45.9		
	Total	85	100		
Market Access	1. Low	12	14.1	72.4	8.4
	2. At the moment	24	28.2		
	3. Tall	49	57.7		
	Total	85	100		
Commodity Prices	1. Low	22	25.9	74.6	10.0
	At the moment	24	28.2		
	Tall	39	45.9		
	Total	85	100		

Similarly, the ability of vegetable farmers to enter the market, in general, vegetable farmers already fully understand the characteristics of the vegetable market. It is evident that 57.7% of farmers have a high level of market mastery, specifically in traditional and modern markets.

Generally, leafy vegetable farmers not only master market access but also manage to control prices. **Table 4** also explains that 45.9% of leafy vegetable commodities have relatively high price levels. The high prices of these commodities become an attraction for farmers to continue cultivating vegetables. This condition also leads farmers to use chemical pesticides with relatively high concentrations so that the produced products have a better appearance (not damaged by pests or diseases).

3.3. Farmer Behavior

Behavior is a series of actions or deeds of a person in responding to something, which then becomes a habit due to a value they believe in. Human behavior is the actions or activities of humans, whether observable or unobservable interactions with their environment, manifested in the form of knowledge, attitudes, and skills[13].

In line with the opinion of[25], stating that farmer behavior in selecting agricultural technologies positively affects the success of farming enterprises.

The behavior of farmers in the application of pesticides on leafy vegetable crops falls into the Moderate category as shown in **Table 5**. Both in terms of knowledge in understanding the use and application of pesticides, it has not yet aligned with economic and health principles[26].

The data presented in **Table 4** shows that the majority of respondents (56.5%) have low-level knowledge, with 25.9% having moderate knowledge about pesticide application in vegetable farming, and 17.6% having high-level knowledge about pesticide use in vegetable farming.

The knowledge of vegetable farmers regarding chemical pesticide is not because they do not understand the residues that will be produced, but rather due to the risk factors they will bear, so farmers generally apply pesticides based on preventive actions. Unlike other types of farming, in leafy vegetable farming, the quality of the vegetables is determined by the integrity and freshness of the produced leafy vegetables, which in turn affects productivity and income[27].

Table 5. Distribution of vegetable farmers based on their knowledge.

Indicator	Category	Respondents		Average	SD
		Amount	%		
1) Knowledge	1. Low	48	56.5	55.4	10.7
	2. At the moment	22	25.9		
	3. Tall	15	17.6		
	Amount	85	100		
2) Attitude	1. Low	2 3	27.0	63.4	12.4
	2. At the moment	52	61.2		
	3. Tall	10	11.8		
	Amount	85	100		
3) Skills	1. Low	43	50.6	61.5	4.5
	2. At the moment	24	28.2		
	3. Tall	18	21.2		
	Amount	85	100		

Similarly, with attitude indicators, generally, leafy vegetable farmers believe that when pesticides are applied, plant pests (caterpillars, grasshoppers, or insects) will not disturb the plants. The challenge is that the resulting produce must have good quality and be attractive to consumers, whereas plants with even just 10% of their leaves damaged by pests have low value.

Some farmers believe that pesticide residues left on crops will disappear if washed with clean water. This belief is not supported by facts because, in general, farmers and consumers do not understand how pesticide residues affect food. This is also driven by the consumer perception that good leafy vegetables are those with intact leaves, without tears or holes, and without insect bite marks.

The low skill level of leafy vegetable farmers in

applying pesticides is more determined by the farmers' knowledge of the function of pesticides themselves. They believe that their farming efforts will bear high risks without pesticides. As stated by Lucinda[28], the low skill level of farmers in applying pesticides is due to their lack of understanding of the concept of Integrated Pest Management, which affects the implementation of new innovations.

Based on **Table 4**, it can be explained that the behavior of farmers in the use of pesticides (85.7%) among leafy vegetable farmers falls into the moderate category. Various aspects also determine how farmers apply pesticides in leafy vegetable farming. In addition to the lack of knowledge, attitudes, and skills possessed by farmers, internal motivation should also be considered as a vision of explanation in every aspect of the situation related to vegetable farming. This is an action or understanding; a clear perception of facts or truths, which helps someone to predict the consequences they might face in the future.

Behavior is also a form of individual awareness to make a rational choice or action that is conscious of the related field. For optimal productivity, vegetable farmers must possess good knowledge, attitudes, and skills (behavior) regarding various aspects related to pesticide use in leafy vegetable farming, as it not only affects high production but also relates to food safety[29].

3.4. Factors Related to Pesticide Use Behavior in Vegetable Farming

Figure 1 shows that farmers' behavior in applying pesticides to leafy vegetable crops is directly influenced by respondent characteristics and market support. The characteristics of the respondents directly influence the farmers' behavior through formal education, the area of vegetable farming land, non-agricultural income, farming income, access to information, and farmer support involvement through market network indicators and commodity prices.

Chi-Square=647.69, df=177, P-value=0.00000, RMSEA=0.077
GFI=0.887, AGFI=0,83, CFI=0.81, IFI=0.81
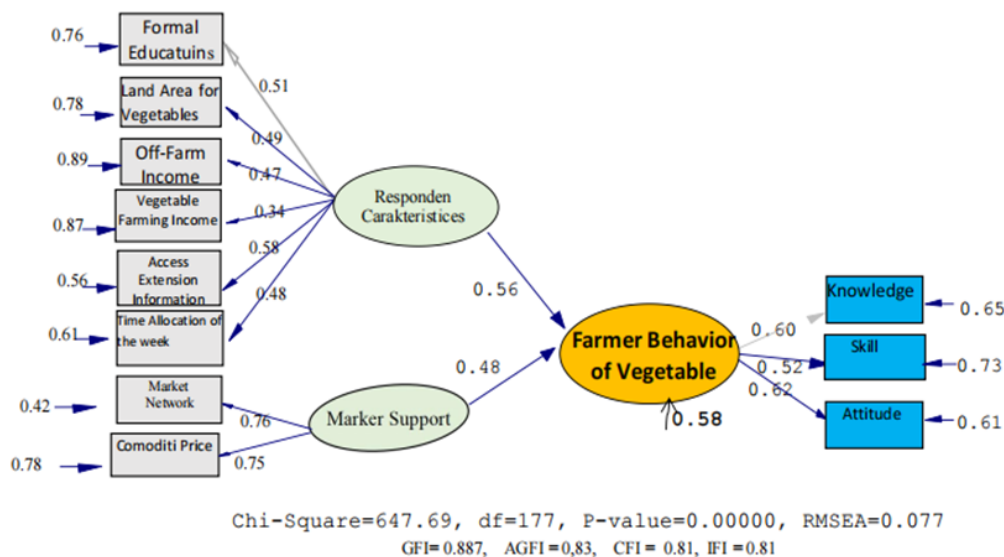
Figure 1. Hybrid model of farmer behavior in pesticide use in vegetable farming.

Referring to **Table 3**, where the indicators of land clearing area and the duration of vegetable farming as respondent characteristic indicators do not directly relate to farmers' behavior in pesticide application. Similarly, the market access indicator as shown in **Table 4** does not contribute to the farmers' behavior in the application of pesticides. applying pesticides.

Figure 1 illustrates that there is a significant influence on the contribution of selected characteristics (education level, area of vegetable farming land, income from outside farming, access to extension media, and time allocation used for vegetable farming).

The education factor and access to information media are more dominant in influencing farmer character-

istics, at 51% and 58% respectively, while the vegetable farming income factor is more dominant in influencing farmer characteristics, at 51% and 58%. only contributing 34%, market support is determined by the presence of market networks and commodities, which each contribute 76 and 75% respectively.

The behavior of vegetable farmers in the application of pesticides is more dominated by the characteristics of the respondents as seen in **Figure 1** with a loading factor value of 0.56 or 56%, indicating that generally, farmers tend to protect their crops from pest and disease attacks, resulting in a risk of crop failure.

Market support through market network indicators and commodity prices provides a loading factor of 0.48 or 48% on farmers' behavior in pesticide application as shown in **Figure 1**. This condition also provides an understanding that leafy vegetable commodities are highly sought after by farmers to cultivate because they have open market opportunities.

The value of R^2 correlation coefficient, which measures the extent to which the dependent variable is accounted for by the independent variables. In **Figure 1** also explain that R^2 value of 0.58 or 58%, meaning that the independent variables contribute 58% to the farmers' behavior towards pesticide use in vegetable farming.

The behavior of farmers in the application of pesticides is determined by the knowledge indicator with a loading factor of 0.60, attitude of 0.52, and skills of 0.62. therefore, it can be stated that with the increase in farmers' knowledge and skills, the farmers' behavior in the application of pesticides in vegetable farming will also improve.

Based on the above findings, it is clear that knowledge and skills significantly contribute to the effective use of pesticides in leafy vegetable farming. With the acquisition of more knowledge, individuals can gain an understanding of the proper methods for applying pesticides in vegetable cultivation, familiarize themselves with potential deficiencies, develop awareness, obtain benefits, and so on, all of which contribute to behaviors related to pesticide application in vegetable farming. These findings are similar to the research [30, 31].

The farmers' skills in pesticide application in vegetable farming, with a loading factor value of 0.62, im-ply that as farmers' skills in vegetable farming increase, they will improve their behavior regarding pesticide application in vegetable farming. Meanwhile, the attitude indicator with a loading factor value of 0.52 shows that farmers' attitudes in selecting and applying pesticides in vegetable farming are important elements in observing farmers' behavior in cultivating leafy vegetables. The improvement of farmers' knowledge, skills, and attitudes regarding pesticide application is an aspect that must be maintained and respected, because besides increasing risks, farming can also provide safe and healthy food availability for consumption. These findings are in line with the research conducted by [8].

4. Conclusion

The research results show that the majority of respondents (89.4%) have low to moderate education levels, which results in farmers' behavior towards the application of pesticides in vegetable farming in the research area still being low. This condition illustrates that the behavior (knowledge, attitude, and skills) of farmers towards the application of pesticides in leafy vegetable farming is still unsatisfactory. Further guidance is needed from extension workers, both through education and training as well as the development of information media on the application of pesticides in vegetable farming.

The field school activities that have been stalled need to be revitalized so that farmers possess the ability in terms of knowledge, skills, and attitudes (behavior) regarding pesticides in general farming and specifically in leafy vegetable farming, in accordance with economic and ecological principles. It is possible to have binding recommendations on the use of pesticides in vegetable farming, so that farmers have a better understanding of pesticide use in vegetable farming as part of meeting current and future food needs.

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Conflicts of Interest

The authors declare no conflicts of interest.

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