AGRISOCIONOMICS
Jurnal Sosial Ekonomi dan Kebijakan Pertanian
ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
6 (1): 191-200, May 2022

THE EFFECT OF FARMER BEHAVIOR ON THE PRODUCTIVITY OF CRYSTAL GUAVA ON FARMERS' GROUP IN SEMARANG CITY

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Submitted 03 February 2020; Approved 02 December 2021

ABSTRACT

The productivity of crystal guava is influenced by farmers' behavior (knowledge, attitudes, and skills). The research objectives were to 1) analyze the behavior of crystal guava farmers, 2) analyze the productivity level of crystal guava 3) analyze the effect of farmer behavior on the productivity of crystal guava in the Crystal Guava Farmers Group Semarang City. The research was carried out from December 10, 2018, to January 27, 2019. The study was carried out in 3 locations: Cepoko Village, Gunungpati District, Bubakan Village, Mijen District, and Wates Village, Ngaliyan District. The method used is the census method. Data was collected through interviews using questionnaires and field observations. Data analysis was carried out descriptively and using multiple linear regression analysis. The results showed that 1) the level of knowledge of farmers was in the high category, the level of attitude was in the medium class, and the skill level was in the medium category, 2) the productivity level of crystal guava is moderate with indicators of high production yield, medium capital, and low labor, 3) the behavior of farmers affects the productivity of crystal guava simultaneously. Attitude does not affect productivity partially.

Keywords: *attitudes, horticulture, knowledge, productivity, skills*

BACKGROUND

Agricultural products developed in Indonesia are horticultural products that include vegetables, fruits, flower plants, and medicinal plants. The Ministry of Agriculture, Directorate General of Horticulture (2017), stated that the Government began to develop horticulture from 2015-to 2019 due to the increasingly stringent competitiveness of horticultural products. According to the Ministry of Agriculture (2017), fruit production in Indonesia in 2016 reached 18,341,289 tons. Guava is one of the commodities whose production always increases from 2012 to 2016. The Central Statistics Agency (2018) states that guava production in Indonesia in 2017 reached 200,495, and in 2018 it reached 230,697 tons. According to Suamba et al. (2017), Crystal guava is a superior variety that many consumers favor due to its sweet taste, few seeds, and high efficacy. In addition, crystal guava has a higher selling price and greater consumer demand than other guava varieties. This shows that crystal guava is very profitable for producers or farmers. Because of this, most of the farmers in Semarang City cultivate crystal guava, especially in Mijen, Gunungpati, and Ngaliyan sub-districts.

Farmers must have good skills in the management and cultivation of crystal guava because farmer behavior is everything that underlies farmers in making cultivation decisions. Mardikanto (1993) states that behavior in extension includes aspects of knowledge, attitudes, and skills to make the community aware, willing, and able to implement changes to achieve increased production, income, and welfare improvement through agricultural development. According to Hamrat et al. (2018), knowledge is one component of farmer behavior, which is also a factor in the adoption of innovation. The level of knowledge of farmers affects farmers in adopting new technology and the

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6 (1): 191-200, May 2022

sustainability of their farming. According to Siswanta et al. (2014), the attitude of farmers is an assessment and tendency of farmers to view specific objects, in this case, the agricultural aspect. According to Suprapto (2009), farmer skills are the ability of farmers to do agricultural work as a form of translating knowledge into practice.

According to Syverson (2011), farmer productivity is the amount of output produced from inputs used efficiently. Optimum productivity can be achieved if the cultivation process is by existing procedures to fulfill consumer demand optimally. The application of SOPs (Standard Operating Procedures) to farmers requires changes in farmer behavior to support a good series of agribusiness systems. Increased productivity will be in line with the income obtained by farmers, where when productivity is high, the revenue received by farmers is also high. Increased productivity will be very beneficial for crystal guava farmers themselves. This study was 1) to analyze crystal guava farmers' behavior (knowledge, attitudes, and skills) in the Crystal Guava Farmers Group in Semarang City. 2) Analyzing the productivity level of crystal guava on farmers. 3) Analyzing the influence of farmers' behavior regarding farmer knowledge, farmer skills, and farmer attitudes towards crystal guava productivity.

RESEARCH METHODS

Research Methods and Sampling

The study used the census method. Namely, all the population became respondents; the crystal guava farmers who joined the Gunung Subur Farmer Group were 15 people, the Sumber Raharjo Farmer Group was 27 people, and the Karya Makmur Farmer Group was 21 people in the city of Semarang. The total number of respondents is 63 people. This is by Gulo and Hardiwati's (2002) opinion, which states that the census method is a comprehensive research method, which means examining all population elements. The research was carried out from 10 December 2018 to 27 January 2019 in 3 Cepoko Village, Gunungpati District, Wates Village, Ngaliyan District, and Bubakan Village, Mijen District, Semarang City, Central Java. The method used in determining the location is purposive with specific considerations and criteria. This is in accordance with Sugiyono (2015) opinion, which states that purposive sampling is a sampling technique on a data source using specific considerations. The three locations were chosen because the area is being developed for its crystal guava potential by the Semarang City Government. Wisdom et al. (2015) stated that Gunungpati and Mijen sub-districts are the centers of the most crystal guava in Semarang City. It is collecting research data by conducting interviews with respondents using questionnaires as a guide and secondary data obtained from literature studies and sources from related agencies.

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Data Analysis Method

The data obtained from the following study were analyzed descriptively using the Likert scale scoring mfromd with 1 to 5. The following is the division of class intervals for the level of behavior, knowledge, attitudes, skills, and productivity of farmers based on the Daulay et al. (2014) formula:

$$\text{Range} = \frac{Highest\ Data - Lowest\ Data}{Number\ of\ Criteria}$$

The result is that the behavioral category interval scale is 3.33. The interval scale for knowledge, attitudes, and skills is 10.66. The productivity category interval scale is 4. The following is the calculation for making class intervals for each indicator.

Table 1. Value of farmer's behavior and productivity indicator

Variable	Category	Class Interval
Farmer Behavior	Low	5 – 8.33
	Currently	8.34 – 11.67
	High	11.68 – 15
Farmers' Knowledge, Attitudes and Skills	Low	8 – 18.66
	Currently	10.67 – 29.33
	High	29.34 – 40
Farmer Productivity	Low	3 – 7
	Currently	>7 – 11
	High	>11- 15

Furthermore, the data obtained were tabulated into Microsoft Excel and analyzed using the SPSS (Statistics Program for Social Sciences) application using an instrument test; the classical assumption test was used to determine whether the results of the multiple linear regression test performed were biased or not. Furthermore, a multiple linear regression test was performed. According to Rahmadeni and Anggreni (2014), multiple linear regression is used if the regression analysis equation involves two or more independent variables on the dependent variable. Multiple Linear Regression Formula: Y = a + bX1 + bX2 + bX3+ e. Where Y is guava productivity (score), a is regression coefficient, X1 is farmer knowledge (score), X2 is farmer attitude (score), X3 is farmer skill (score), and e is error coefficient.

F-test

Mulyono (2018) states that if the value of Fcount > Ftable, then the independent variable simultaneously affects the dependent variable e in other words, F count Ftable or sig value > 0.05, Ho is accepted, meaning that there is no simultaneous effect between the independent variable and the dependent variable. F count > Ftable or sig value < 0.05, Ho is rejected, meaning a simultaneous influence between the independent and dependent variables.

t-test

Mulyono (2018) states that the value of sig < 0.05 means that the independent variable partially affects the dependent variable or, t count < t table, Ho is accepted, Ha is rejected, meaning that the independent variable has no significant effect on the dependent variable. T count > t table, Ho is rejected, and Ha is accepted, which means that the independent variable partially affects the dependent variable.

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Coefficient of Determination

Santosa and Hamdani (2007) stated that the value of the coefficient of determination means that every change in the independent variable by one unit will affect changes in the dependent variable. Munparidi (2012) states that if the value of Adjusted R square = 1 indicates that the independent variable provides all the information needed to predict the dependent variable, while the value of Adjusted R square = 0 indicates that the independent variable cannot explain the dependent variable.

RESULT AND DISCUSSION

Characteristics of Respondents

Based on the results of the study, the data on the characteristics of the respondents were obtained as follows:

Table 2. Characteristics of Farmer Respondents in the Crystal Guava Farmer Group in Semarang City

Variable	Category	Number of Respondents	Percentage (%)
Age (Years)	40	7	11.11
	41- 48	27	42.85
	49 – 56	17	26.98
	57 – 64	6	9.52
	65	6	9.52
Education	Not Completed Primary School	4	6.35
	Primary School	15	23.81
	Junior High School	17	26.99
	Senior High School	27	42.86
Profession	Farmer	49	77.78
	Laborer	6	9.52
	Trader	1	1.59
	Breeder	2	3.17
	Security Guard	2	3.17
	Self-Employed	3	4.76
Farming Experience (Years)	5	9	14.29
	6-10	51	80.95
	11-15	2	3.17
	16	1	1.59

Respondents are in the category of productive age (40 years – 64 years), as many as 57 people. Farmers with a formative period give maximum results because they have more vital energy. This is the opinion of Harahap et al. (2018), the said that someone of a productive age would give maximum results. The highest education level of respondents is SMA, with a percentage of 42.86%, as many as 27 people. Higher education allows the level of behavior of farmers to increase the productivity of high crystal guava, as evidenced by farmers' willingness to adopt science and knowledge about pruning guava crystal guava plant and directly apply it to the field. This is the opinion of Damayanti (2013), which states that the higher the education of farmers, the easier it is to accept, implement, and develop innovations in their business. Respondents with the main job as farmers as many as 49 people with a percentage of 77.78% so that respondents will focus more on managing crystal guava farming

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and have more working time. This is the opinion of Apriani et al. (2018), which states that farmers with the primary job status as farmers have a more extraordinary outpouring of working time, so they are more focused than farmers who make their farming a side job. 1.59% of respondents have high farming experience (more than 16 years).

Farmer Behavior Level

The behavior of farmers will affect the cultivation process carried out by farmers. After that, how the farmer's attitude in responding to whether he wants to do according to cultivation provisions, then the farmers will apply through action. Thus, the skills of farmers are born.

Table 3. Number and Percentage of Farmers Based on Behavior Level

No	Category	Class Interval	Amount
1	Low	5 - 8.33	-
2	Currently	8.34 – 11.67	49
3	High	11.68 - 15	14

A total of 49 farmers have a moderate level of behavior. However, the level of knowledge of farmers is high, and the level of attitudes and skills of farmers is intermediate, which causes the level of behavior of farmers to be reasonable. This is the opinion of Sa'adah et al. (2015), which states that changing behavior requires knowledge that underlies the formation of farmer attitudes that will shape farmers' actions in implementing agriculture. Farmers may already be able to receive input and new knowledge about crystal guava cultivation from having the high ability. However, the heart does not want to do it so and the farmers have not been able to apply this knowledge to the cultivation of crystal guava. Farmers are also aware and willing to adopt new knowledge, but farmers are not yet ready to pause, so farmers do not experiment.

Farmer Knowledge Level

Farmer knowledge can influence decision-making in crop cultivation, which will affect the level of productivity produced. The level of knowledge of farmers is included in the high category. Farmers have earned training from the Semarang City Agriculture Service 5 times from 2016 to 2019. During the training process, farmers seemed enthusiastic by asking several questions to resource persons, participating in discussions, and willing to experiment with training materials in the field. Even if you only get 5x training, the farmer's enthusiasm to absorb knowledge and learn is very high. After the training and implementation process, farmers often have discussions about techniques that are not yet understood and the problems they face. This causes the level of knowledge of farmers about crystal guava cultivation to be also high. This is by Kuntariningsih and Maryono's (2013) opinion, which states that training for farmers will positively impact farm performance. Farmers are also actively asking extension workers and other farmers about the problems with their crystal guava plants so that faster solutions and handling are obtained to reduce the incidence of decreased production.

Table 4. Number and Percentage of Farmers Based on Knowledge Level

No	Category	Class Interval	Amount
1	Low	8 – 18.66	-
2	Currently	10.67 – 29.33	30
3	High	29.34 – 40	33

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Farmer Attitude Level

The farmer's attitude is the response or assessment given by the farmer about an object, in this case, the attitude towards cultivating crystal guava plants.

Table 5. Number and Percentage of Farmers Based on Attitude Level of Fame

No	Category	Class Interval	Amount
1	Low	8 – 18.66	-
2	Currently	10.67 – 29.33	33
3	High	29.34 – 40	30

The attitude level of farmers is included in the medium category. Farmers are willing to apply the cultivation knowledge obtained from the learning process, such as training and counseling, although not all of them. For example, farmers who initially do not do pruning eventually want to apply to prune or pruning as helpful technology for increasing productivity. One factor that influences farmers' willingness to apply cultivation knowledge is education. The higher the education of farmers, the easier it is for farmers to absorb and understand new knowledge, causing the farmers' attitude level to increase. This follows Marliati et al. (2008), which state that the existence of a good farmer's insight about something will encourage a good attitude.

Farmer's Skill Level

Farmer skills are the ability of farmers to optimize the productivity of their farms using methods that farmers have, either in a way that conforms to scientific standards or using hereditary methods. Farmer skills are included in the medium category. Farmers can cultivate crystal guava by the SOP even though it is not 100% appropriate. One example of skills that are not appropriate is that not all farmers do seedling and seeding themselves because they feel they don't have enough time to do it. Farmers prefer to buy ready-made plant seeds. One factor in the skill level of farmers is that the longer the experience of farming, the higher the skills possessed by farmers, as evidenced by the fact that most farmers can cultivate hereditary and the length of experience in agriculture. This follows the opinion of Dewi et al. (2017), which states that the more extended farming experience that farmers have, the more likely they are to have high skills so that their productivity will also be increased. The skill level of farmers has not reached a high value because some farmers have not been able to apply suitable irrigation methods, do not do regular pruning properly and correctly, and the harvest is directly sold without adding value to goods or processing production results.

Table 6. Number and Percentage of Farmers by Skill Leve

No	Category	Class Interval	Amount
1	Low	8 – 18.66	0
2	Currently	10.67 – 29.33	43
3	High	29.34 – 40	20

Farmer Productivity Level

Productivity is the ratio between the results achieved with all the resources that have been used. The productivity level of crystal guava in Semarang City is moderate. One of the factors that affect productivity is the result of production, which includes land, capital, and labor. This is the opinion of Winarsih et al. (2014), which states that production actors in farming have land, technology, money, and work. Crystal guava production in 2018 amounted to 119.87 tons per year which is still in the high category due to the standard output of crystal guava, which is 10-15 kg per

ISSN 2580-0566; E-ISSN 2621-9778
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tree. The number of farmer trees is approximately 5,509 trees. If one tree is 15 kg, then the product should be 82.64 tons.

Table 7. Number and Percentage of Farmers Based on Productivity Level

No	Category	Class Interval	Amount
1	Low	3 – 7	-
2	Currently	>7 – 11	35
3	High	>11- 15	28

Meanwhile, the total yield of respondent farmers was 119.87 tons. The capital issued is in the medium category because 12 farmers use their income to return their money, and six people use the income to meet their daily needs. The rest still use income as capital but, on the other hand, also use the income to meet their living conditions. This results in less productive capital. The labor indicator is in a low category. Twenty-one farmers allocated very high time, namely 6-8 hours for crystal guava farming activities, and the rest gave time for crystal guava farming activities below that. Many farmers do not provide time for their farming, so farmers can be less intensive in crystal guava farming because many allocate less than 6-8 hours on the land. Thirty-three people are motivated to cultivate crystal guava and will continue to be consistent with crystal guava cultivation. There are still many farmers who do not allocate time for their farming so that farmers can be less intensive in crystal guava farming because many give less than 6-8 hours on the land. Thirty-three people are motivated to cultivate crystal guava and will continue to be consistent with crystal guava cultivation. There are still many farmers who do not allocate time for their farming so that farmers can be less intensive in crystal guava farming because many give less than 6-8 hours on the land. Thirty-three people are motivated to cultivate crystal guava and will continue to be consistent with crystal guava cultivation.

Influence of farmers' knowledge, attitudes, and skills fon farmer productivity

Based on the results of the analysis, the results of the knowledge test (X1) and productivity (Y) are typically distributed, while attitudes (X2) and skills (X3) are generally not distributed. The classical assumption test analysis results, namely the variable data X1, X2, and X3, did not occur multicollinearity, did not happen autocorrelation and did not occur heteroscedasticity. The classical assumption test has met the requirements and can be continued to the multiple linear regression test. This is the opinion of Mona et al. (2015), which states that before the regression model is carried out to test the hypothesis, the classical assumption is tried first.

The Influence of Farmers' Behavior on Crystal Guava Productivity

Based on the research results, it is known that the regression equation from the research data is Y = -0.621+ 0.404 X1 + 0.270 X2 + 0.495 X3 + e. Based on this equation, it can be said that the constant value is -0.621. The knowledge variable (X1) has a regression coefficient of 0.404 which states that every 1% increase in farmer knowledge will increase farmer productivity by 40.4. The attitude variable (X2) has a regression coefficient of 0.270, which says that every 1% increase in farmers' attitudes will increase farmers' income by 27. The skills variable (X3) has a regression coefficient of 0.495 which states that every 1% increase in farmer skills will increase farmer productivity is 49.5.

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Table 8. Result of Regression Analysis

No	Independent Variable	Regression Coefficient	t value	Sig.	Information
1	Knowledge (X1)	0.404	2,644	0.010	Significant
2	Attitude (X2)	0.270	1,330	0.189	Not significant
3	Skills (X3)	0.495	2,581	0.12	Significant
	Dependent variable	: Productivity			
	constant	: -0.621			
	R Square (R2)	: 0.697			
	F count	: 48,472			
	Sig	: 0.000			

*) Sig. at 5%

Based on the results of the analysis test, it can be seen that the variables that affect the productivity variable (Y) independently are the knowledge variable (X1) and the skill variable (X3). At the same time, attitude does not affect alone. Knowledge and skills variables partially influence productivity because farmers have a high level of knowledge to understand how to manage a good crystal guava farm to provide high production yields. A high level of expertise will lead to increased productivity. The attitude variable does not affect the productivity variable partially because the attitude level of the farmer is included in the medium category. This is caused by farmers who do not want to apply good crystal guava cultivation. Therefore, not all farmers have a high attitude. The skill variable influences the productivity variable because the skill level is in the medium category. If the skill level is high, the production output will also increase.

The knowledge variable (X1), attitude (X2), and skills (X3) have a simultaneous effect on the productivity variable (Y). The occurrence of simultaneous influence between the independent variables and the dependent variable is due to the level of behavior of farmers in the medium category, and the level of farmer productivity is also in the medium category. This is by Fadhilah's (2017) opinion, which states that the level of knowledge, attitudes, and skills will determine a person's behavior towards something. Knowledge, attitudes, and skills are an integral part of farmer behavior. Therefore, these three variables can affect productivity simultaneously. Farmers need knowledge processes that will be carried out. Furthermore, farmers take a stand from the tofu results to be willing to implement good crystal guava farming. After that, farmers will process the knowledge and willingness to apply them with the skills or abilities they have to realize good crystal guava farming. Thus, the appropriate productivity is obtained.

The Coefficient of Determination value in the Adjusted R Square value is 0.697, meaning that the magnitude of the influence of the behavior, attitude, and skills variables on the productivity variable is 69.7%, while other variables influence the rest. This follows the opinion of Santosa and Hamdani (2007), which states that the value of the coefficient of determination means that every change in the independent variable by one unit will affect changes in the dependent variable. Munparidi (2012) states that if the value of Adjusted R square = 1 indicates that the independent variable provides all the information needed to predict the dependent variable, while the value of Adjusted R square = 0 indicates that the independent variable cannot explain the dependent variable.

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CONCLUSION AND SUGGESTION

Conclusions based on research results "The Influence of Farmer Behavior on Productivity of Crystal Guava in Farmer Groups in Semarang City "is 1) The level of behavior of crystal guava farmers in the medium category, crystal guava farmer knowledge levelinlevel in category high, crystal guava farmer attitude level in category medium and skill level of crystal guava farmer in category currently. 2) The productivity level of crystal guava farmers is in the medium category. It is influenced by external factors, namely land area/production in the high category, capital in the medium category, and land in the low category.3)The behavior of crystal guava farmers in Semarang City which includes knowledge, attitudes, and skills in multiple linear analysis have a simultaneous influence on farmer productivity. While that partially affects the productivity of farmers only knowledge and skills. Suggestions that can be given to crystal guava farmers in Semarang City are 1)Maintaining the level of knowledge possessed and increasing the level of attitude or willingness to start making decisions in applying the knowledge gained to develop the skills kept that the productivity obtained will also increase.2) Increase farmers' working time to manage crystal guava plants intensively and increase farmers' ability to manage income and farming capital. Maximum results are obtained. 3)Strengthening the factors that affect farmer productivity, ranging from internal and external, to obtain optimal results.

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