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Factors Influencing Farmers' Interest in Using *Trichoderma sp.* for Chili Cultivation in Giritirto Village, Gunung Kidul

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ABSTRACT

Purpose of the study: This study aims to identify and analyze the internal and external factors that influence farmers' interest in using *Trichoderma sp.* as a biological control agent for chili cultivation in Giritirto Village, Purwosari Subdistrict, Gunung Kidul.

Methodology: This study used a quantitative approach with purposive and random sampling methods. Data were collected through observation, interviews, questionnaires, and documentation. Instrument testing employed Microsoft Excel. Data analysis included validity and reliability tests, classical assumption tests, and multiple linear regression using SPSS software to assess the influence of various independent variables.

Main Findings: The study found that farmers' interest in using *Trichoderma sp.* was generally high. Among the factors examined, the role of extension workers and the availability of facilities and infrastructure had a significant positive effect on farmers' interest. In contrast, age, education level, and farming experience did not have a significant influence on their interest in adopting *Trichoderma sp.*.

Novelty/Originality of this study: This study uniquely explores the socio-demographic and institutional factors influencing farmers' interest in adopting *Trichoderma sp.*, which has rarely been addressed in previous research. It provides new insights into the human dimension of sustainable agriculture adoption, offering practical implications for policy and extension strategies to promote environmentally friendly farming practices.

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1. INTRODUCTION

Chili plants (*Capsicum annuum L.*) are a very well-known vegetable commodity and are widely used throughout the world. Red chili is the type of chili that is most widely consumed by the Indonesian people. Most chilies are consumed by households with usage reaching 61% of the total domestic chili consumption. The rest of the chili is used as raw material for both the food and non-food industries and also for export purposes, both in the form of fresh and processed chilies, such as chili powder and dried chili. Data from the Statistics Agency (BPS) shows that chili consumption in Indonesia reached 636.56 thousand tons in 2022. This figure increased from 2021 which was 596.14 thousand tons and also reached 2020 as much as 549.14 thousand tons and also reached 2020 as much as 549.48 thousand tons. In fact, this consumption has exceeded before the Covid-19 pandemic, precisely in 2019, which was 629.02 thousand tons. BPS explained that chili production in 2022 reached 1.48 million tons. This figure also increased by 8.47% or 115.25 thousand tons from 2021. Chili

consumption by the household sector in 2022 reached 636.56 thousand tons, an increase of 6.78% or 40.42 thousand tons from 2021. Household participation in consumption was 71.33%.

Purwosari District, Gunung Kidul Regency has an area of 7,175.99 ha. It is divided into 5 villages, namely Giripuwo Village, Giticahyo Village, Girijati Village, Giriasih Village and Gitirto Village. The commodities cultivated in Purwosari District are horticultural plants. Based on the problems in the field, the productivity of red chili plants has decreased from 1,387 quintals to 1,061 quintals in 2022. This decrease occurred due to the attack of fusarium wilt disease. Farmers often control the disease by using chemical pesticides. This use is still relatively high because most farmers still consider the results to be faster and more practical, even though if pesticides are used excessively, it can damage human health and the environment because they are toxic [1]-[3]. Pesticides can cause negative side effects in the short and long term on biodiversity, killing natural enemies and the health of farmers [4]-[6]. Efforts to prevent the high use of chemical pesticides are by using liver agents in agriculture [7]-[9]. *Trichoderma* is one of the biological agents that is widely used in agricultural activities, because *Trichoderma* is known to have the ability to control various soil pathogens and improve plant health [10]-[12]. In the context of chili cultivation, the use of Trichoderma can provide significant benefits, both in terms of disease control and increasing crop yields. One solution that can overcome this problem is the use of *Trichoderma sp*. fungi. Chili farmers are starting to be interested in using trichoderma technology as a more environmentally friendly and sustainable alternative [13]-[15]. There is a lot of evidence that shows the benefits of *Trichoderma* in improving plant health, but farmers still have not used trichoderma to overcome fusarium wilt [16], [17]. Therefore, it is important to conduct research on the factors that influence farmers' interest in using *Trichoderma* on chili plants.

Several previous studies have shown that *Trichoderma sp.* has high effectiveness in controlling fusarium wilt disease in chili plants. Wati et al. [18] proved that the combination of soil solarization and Trichoderma harzianum application significantly reduced the intensity of disease attacks and increased crop yields. Likewise, Hasanah et al.[19] found that the combination of *Trichoderma* with betel leaf extract and turmeric was able to inhibit infection *Fusarium oxysporum f.sp. capsici* up to more than 60%. In addition, Febriana et al. [20] revealed that the right application time, namely 7 days before planting, greatly influences the effectiveness of disease control. On the other hand, Putra et al.[21] highlighted that the use of *Trichoderma* with organic fertilizers can also significantly increase the growth and yield of chili plants. However, these studies focus more on biological and technical aspects, such as dosage, method, and application time, without exploring in depth the factors that influence farmers' decisions in using these biological agents. In fact, farmers' interest is a crucial aspect that is greatly influenced by internal factors such as age, education level, and farming experience, as well as external factors such as the role of extension workers and the availability of production facilities. This gap shows that there are still very few studies that map the factors that influence farmers' interest in adopting *Trichoderma sp.* as an alternative biological control. Therefore, this study is important to fill this gap and produce appropriate recommendations in encouraging the adoption of sustainable agricultural technology by chili farmers.

The urgency of this research lies in the importance of encouraging the transformation of agricultural practices from the intensive use of chemical pesticides to the use of more environmentally friendly and sustainable biological agents, especially amidst the increasing national consumption of chili and decreasing productivity due to fusarium wilt attacks. Although *Trichoderma sp.* has been scientifically proven to be effective in controlling soil-borne pathogens and improving plant health, the adoption of this technology by farmers in the field is still low [16], [17]. This indicates a gap between scientific effectiveness and practical application at the farmer level [22], [23]. The low interest of farmers in the use of *Trichoderma* is likely influenced by various internal factors such as education level, farming experience, and age, as well as external factors such as the role of extension workers and the availability of infrastructure [24], [25]. Therefore, this research is important to empirically identify the factors that influence farmer interest, so that the right approach strategy can be formulated to increase the adoption of biological technology. The results of this study are expected to be able to contribute to the preparation of agricultural extension policies and programs that are more effective in encouraging sustainable agriculture in areas such as Purwosari District and other areas with similar conditions.

The farmer's interest depends on a constant tendency to pay attention to certain activities and contains a sense of self-pleasure that makes a person active in the field he is engaged in. A person's interest will arise in themselves if they have a desire to do something. Desires that are done repeatedly will become a habit based on needs. Farmers' willingness to do a job can be done consciously based on feelings and thoughts. Based on the problems above, farmers' awareness of the use of trichoderma needs to be increased by increasing farmers' interest in using Trichoderma as a disease control in chili plants. Based on these problems, this study aims to determine the influence of internal and external factors on the level of farmers in the use of Trichoderma sp on chili plants. Then to determine the level of farmers' interest in using Trichoderma on chili plants.

2. RESEARCH METHOD

The study was conducted from November to February 2025. Located in Giritirto Village, Purwosari Subdistrict, Gunung Kidul Regency, Special Region of Yogyakarta Province. This study is a type of quantitative research, where the analysis is through a numerical data approach. The nature of this study states a causal relationship, where the study explains the cause of a relationship between the independent variable (X) and the dependent variable (Y) [26]. This study uses a purposive sampling method in selecting a location based on certain considerations. Gunung Kidul Regency was chosen because it has been determined by the DIY Agriculture and Food Security Service as the location of the activity. Furthermore, Purwosari Subdistrict was chosen because it is the largest chili production center in the Special Region of Yogyakarta, with production reaching 1,387 quintals (BPS Gunung Kidul, 2022). Meanwhile, Giritirto Village was chosen because it has a problem of low chili plant productivity caused by fusarium wilt disease.

The population is all components that will later be combined into one area. Population components are all subjects to be measured [27]. The characteristics of the population in this study are chili farmers and registered in farmer groups in Giritirto Village. Farmer groups with purposive sampling, as many as 4 horticultural farmer groups (chili) in Giritirto Village with a population of 54 farmers spread across the 5 farmer groups.

Table 1. Number of Research Population

Farmers Group	Population
Sinar Harapan	8
Sido Makmur	9
Tirta Gempita	12
Tunas Harapan	12
Gathering fortune	13

The random sampling technique applied in this study is using a random sampling technique which is one of the probability sampling techniques in sampling, namely by providing opportunities for each member of the farmer group. The formula for taking the number of samples in this study uses the Slovin formula so that the number of samples in this study is 36 farmers, with a 10% error rate due to considerations of time and research cost limitations. The results of determining the number of samples in each farmer group are as follows:

Table 2. Number of research samples for each farmer group

Farmers Group	Population	Formula	Ni
Sinar Harapan	8	8:54 X 36	5
Sido Makmur	9	9:54 X 36	6
Tirta Gempita	12	12:54 X 36	8
Tunas Harapan	12	12:54 X 36	8
Gathering fortune	13	13:54 X36	9

This study uses two types of data sources, namely primary data and secondary data. Primary data is obtained directly from respondent farmers through interviews and questionnaires. Meanwhile, secondary data is obtained from various written documents such as notes, books, agency reports, and other sources that support the study activities. To obtain relevant and comprehensive data, four main methods of data collection are used, namely observation, interviews, questionnaires, and documentation.

Observations are carried out by directly observing conditions in the field to obtain information regarding farmers' interest in the use of Trichoderma sp. fungi on chili plants. Interviews are conducted directly with respondent farmers, using a questionnaire guide as a measuring tool. The questionnaire given contains questions that reveal factors that influence farmers' interests, arranged based on predetermined variable indicators. Documentation is carried out by recording data related to the identity of respondents, as well as additional information obtained from the library or related agencies. The following is a summary of data collection methods in table 3.

Table 3. Summary of data collection methods

Method	Description
Observation	Direct observation of farmers' conditions in the use of Trichoderma sp.
Interview	Direct Q&A with respondents, accompanied by a questionnaire guide
Questionnaire	Written instruments containing questions about factors that influence interest
Documentation	Data collection from documents, records, reports, and other written sources

The research instrument is a tool used to measure the variables being studied. Determination of indicators and parameters is done to facilitate the preparation of questions in the questionnaire. Respondent assessment uses a modified Likert scale, with four score categories, namely: 3 (highest), 2 (moderate), and 1 (low), without a neutral value. This aims to prevent respondents from choosing middle or hesitant answers. The instrument was tested for validity and reliability before being used. Data analysis in this study used the classical assumption test, namely the normality test, multicollinearity, and heteroscedasticity. Then a descriptive analysis was carried out with the following score category ranges in table 4.

Table 4. Farmer interest score categories

Score	Category
77.78 -100%	High
55.56 – 77.77%	Medium
33.33 – 55.55%	Low

Multiple linear regression analysis was used to determine the factors that influence farmers' interest in using *Trichoderma sp.* fungi on chili plants, with independent variables including age, education, experience, role of extension workers, and facilities and infrastructure. This regression model was analyzed using Microsoft Excel and SPSS to measure the influence of internal and external factors on farmers' interest. Determination coefficient test (R^2) used to assess the accuracy of the model in explaining the dependent variable, where the R^2 value approaching 1 indicates a strong influence. In addition, the F test is conducted to determine the simultaneous influence of all independent variables on farmer interest, while the T test is used to measure the influence of each variable partially, with the test results determined based on the significance value and the comparison between the calculated value and the table value.

3. RESULTS AND DISCUSSION

3.1. Characteristics of Respondents in the Study Area

The results of this study were conducted by involving 36 farmers as respondents in Giritirto Village, Purwosari District, Gunung Kidul Regency. All respondents were members of farmer groups spread across 5 groups with the characteristics of chili farmers. In this study, measurements were made of factors that influence farmers' interest in using Trichoderma on chili plants by filling out a questionnaire. The characteristics of respondents based on gender can be seen in the following table 5.

Table 5. Respondent characteristics based on gender

No	Gender	Total	Percentage
1	Male	24	75
2	Female	12	25
	Total	36	100

Based on the table, it can be seen that the number of male respondents is greater when compared to female respondents. The number of male respondents is 24 people (75%) while the number of female respondents is 12 people (25%). The characteristics of respondents based on age can be seen in the following table 6.

Table 6. Respondent characteristics based on gender Respondent characteristics based on age

No	Age	Total	Percentage
1	Children 0-14	0	0
2	Productive 15-64	34	90
3	Seniors > 65	2	10
	Total	36	100

Age groups include children (0-14 years), productive age (15-64) years, and elderly (> 65 years) [28] berdasarkan tabel dapat dilihat bahwa responden dalam kajian ini didominasi oleh petani usia produktif (15-64 tahun) dengan presentase mencapai 90% dari seluruh responden yang terlihat. Sementara untuk responden dengan usia no produktif atau usia lanjut hanya mencapai 10% dari seluruh responden.

Apart from that, according to Khairunnisa [28], the ability to grasp and remember information from young and productive farmers through field schools is better compared to non-productive or elderly farmers. Respondent characteristics based on education can be seen in the following table 7.

Table 7. Respondent Characteristics Based on Education

No	Education Level	Total	Percentage
1	Not attending school	0	0
2	Primary school/equivalent	6	18
3	Junior high school/equivalent	21	55
4	Senior high school/equivalent	9	27
5	College	0	0
	Number	36	100

Based on the table, it can be seen that the level of education of the largest respondents in this study is dominated by junior high school/equivalent education which reaches 21 people (55%), then for education with the second highest percentage is high school/equivalent education as many as 9 people (27%). Meanwhile, there is also elementary school/equivalent education as many as 6 people (18%). This is supported by Pratiwi's research [29], that the level of education will affect a person's level of understanding of something they are learning. In addition, the level of education will also affect a person's learning capacity because there are learning activities that require a certain level of knowledge to be able to understand.

The longer a farmer works in farming, it can be said that he already has the ability in cultivation techniques and is slightly more able to receive better information and apply innovation. Farmers' insights regarding theory and practice tend to be broader because they have learned a lot from activities carried out in the field [30]. Respondent characteristics based on farming experience can be seen in the following table 8.

Table 8. Respondent Characteristics Based on Farming Experience

No	Farming Experience	Total	Percentage
1	New < 5 Years	3	9
2	Medium 5-10 Years	8	24
3	Old > 10 Years	25	67
	Number	36	100

Based on the table, it can be seen that the respondents in this study were dominated by farmers who had been farming for a long time (> 10 years) as many as 25 people with a percentage reaching 67%, then for the second highest length of farming (5-10 years) as many as 8 people with a percentage reaching 24% and finally the lowest length of farming (< 5 years) as many as 3 people with a percentage of 9% of all respondents. In line with Geovani et al (2022) who stated that farmers' field experience can open up theoretical and practical insights. This situation has the potential to determine farmers' interest in using Trichoderma fungi on chili plants.

3.2. Instrument Testing

The thing that was done before showing that all statement indicators were worthy of being used as research instruments was conducting a validity test on 15 respondents. The results of the validity test were carried out by giving 20 question items and processed using Microsoft Excel which can be seen in the following table 9.

Table 9. Results of instrument validity testing

Variable	Question Items	R Count	Sig.	Information
External Factors				
Role of Extension Workers (X5)	X5.1	0.861	0.514	Valid
	X5.2	0.732	0.514	Valid
	X5.3	0.828	0.514	Valid
	X5.4	0.828	0.514	Valid
Availability of Facilities and Infrastructure	X6.1	0.827	0.514	Valid
	X6.2	0.626	0.514	Valid
	X6.3	0.684	0.514	Valid
	X6.4	0.788	0.514	Valid
Interest (Y)				
Awareness	Y.1	0.937	0.514	Valid
	Y.2	0.728	0.514	Valid
	Y.3	0.847	0.514	Valid
	Y.4	0.847	0.514	Valid
	Y.5	0.937	0.514	Valid
Interest	Y.1	0.869	0.514	Valid
	Y.2	0.869	0.514	Valid

Variable	Question Items	R Count	Sig.	Information
Pleasure	Y.3	0.914	0.514	Valid
	Y.4	0.858	0.514	Valid
	Y.1	0.766	0.514	Valid
	Y.2	0.875	0.514	Valid
	Y.3	0.902	0.514	Valid

The results of the validity test with 15 respondents can be seen that all variable questions submitted to respondents are valid because it can be seen from the calculated R value> R table (0.514) which uses a significance level of 5% so that it can be concluded that all questions on the questionnaire sheet can be said to be worthy as an instrument to measure research data. The results of the reliability test were carried out on 15 question items and processed using Microsoft Excel can be seen in table 10.

Table 10. Results of instrument reliability testing

Variables	Cronbach's Alpha	Description
Role of Extension Workers (X5)	0.817	Reliable
Availability of Facilities and Infrastructure (X6)	0.785	Reliable
Interest (Y)	0.814	Reliable

Based on the reliability test results table from 15 respondents, it is known that all variables in the questions are declared reliable because they have met the specified value, namely the Cronbach's Alpha value >0.7.

3.3. Classical Assumption Test

The normality test aims to test whether the observation is normal or not. This test uses the On Sample Kolmogrov-Smirnov Test, the results of the normality test can be seen in the following table 11.

Table 11. Results of normality test

		Unstandardized Residual
N		36
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	4425.66067894
Most Extreme Differences	Absolute	.108
	Positive	.070
	Negative	-.108
Test Statistic		.108
Asymp. Sig. (2-tailed)		.200[c,d]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Based on the asymp. Sig (2.tailed) value in the non-parametric On Sample Kolmogorov-Smirnov Test shows a value of 0.05 with a value of 0.200, then it is stated to be normally distributed. This means that the data obtained has met the assumption of normality. The multicollinearity test aims to determine whether there is a correlation between independent variables in the regression model. A good regression model should not have a correlation between independent variables. To determine whether or not there is multicollinearity, it can be seen from the Variance Inflation Factor (VIF) and tolerance (a) values.

Table 12. Results of multicollinearity test

Model		Collinearity Statistics	
		Tolerance	VIF
1	Age	.756	1.322
	Education	.858	1.165
	Experience	.851	1.175
	Role of Extension Worker	.672	1.488
	Availability of Facilities and Infrastructure	.675	1.482

a. Dependent Variable: y

Based on the VIF value of each variable with a value of <10 and a tolerance value of >0.1. it can be concluded that the data obtained does not have multicollinearity, and has met the assumption of multicollinearity

to be continued to multiple linear regression analysis. The results of the Heteroscedasticity test are presented in the following table 13.

Table 13. Heteroscedasticity test results

Variables	Sig	Description
Age	0,759	Does not occur in heteroscedasticity
Education	0,128	Does not occur in heteroscedasticity
Experience	0,948	Does not occur in heteroscedasticity
Role of Extension Workers	0,588	Does not occur in heteroscedasticity
Availability of Facilities and Infrastructure	0,761	Does not occur in heteroscedasticity

Based on table 13, it can be seen that the probability value is greater than 0.05, so it can be said that the variables proposed in the study do not experience heteroscedasticity and have met the assumption of heteroscedasticity. The results of the classical assumption test show that the data obtained have met the requirements of the classical assumption, and can be continued to multiple linear regression analysis.

3.4 Descriptive Analysis

The role of the extension worker as a motivator for the activities carried out is that the extension worker provides encouragement and information that can overcome problems when farmers experience problems in the chili cultivation process, for example the problem faced is less than satisfactory harvest results due to disease attacks from fusarium which are caused by low soil quality so that the potential for disease is very high [28]. Distribution of farmers based on the role of extension workers can be seen in the table 14.

Table 14. Distribution of farmers based on the role of extension workers

No	Score	Category	Frequency	Percentage (%)
1	77.77 - 100	High	18	50
2	55.56 - 77.77	Medium	18	50
3	33.33 - 55.55	Low	0	0
	Total		36	100

Based on the table, it is known that the distribution of farmers based on the role of extension workers is 50% (high), and 50% (moderate). The majority of farmers in the Village responded that the role of extension workers is in the high category. This is in accordance with the conditions in the field that extension workers are intensively involved in providing materials, counseling, assistance, and direction for farmers. This situation confirms the question by Eryanto et al. [31]namely that extension is expected to be a motivator in supporting the implementation of solving problems faced by farmers by plant pests. Details of the indicators can be seen in the following table 15.

Table 15. Achievement of extension worker role indicators

No	Indicators	Percentage (%)	Category
1	Extension workers accompany activities in the use of trichoderma	83%	High
2	Extension workers invite farmers to use Trichoderma	77%	High
3	Extension workers provide material on trichoderma fungi	79%	High
4	Trichoderma information briefing	80%	High
	Average	80%	High

The indicator with the highest achievement in the role of extension workers is mentoring activities of 80%, but the indicator of farmer knowledge about trichoderma is 77%. The average farmer response to the role of extension workers obtained a percentage of 80% or high. This shows that the role of extension workers in mentoring and delivering information (trichoderma) has been conveyed correctly, but not evenly.

The availability of agricultural facilities and infrastructure influences farmers' decisions in terms of interest in the technology that will be used in the cultivation process. The more agricultural facilities and infrastructure are available, the better the farming business will be run. The availability of complete and affordable production facilities is thought to be able to influence the level of interest in using *Trichoderma sp* fungi [32].

Table 16. Availability of facilities and infrastructure

No	Score	Category	Frequency	Percentage (%)
1	77.77 - 100	High	15	45%
2	55.56 - 77.77	Medium	21	55%
3	33.33 - 55.55	Low	0	0
	Total		36	100

In the table it is known that 45% (high), 55% (moderate). The distribution of government support is in the high category according to field conditions that the availability of facilities and infrastructure in agriculture can encourage farmers to implement and assist environmentally friendly agriculture. This condition confirms the statement by Vinet & Zhedanov [33], namely, a farmer's interest can be increased by increasing training or extension activities related to organic fertilization technology innovations, one of which is trichoderma which has the potential to overcome existing problems in Giritirto.

Table 17. Achievement of indicators for the availability of facilities and infrastructure

No	Indicators	(%)	Category
1	Getting access to information or training related to the use of trichoderma	82%	High
2	Participating in training programs related to the trichoderma mushroom program	74%	Medium
3	Getting materials to grow trichoderma mushrooms	68%	Medium
4	Knowing how to use trichoderma	79%	High
	Average	76%	Medium

The results of farmers' interest (awareness, interest and enjoyment) in the use of trichoderma fungi on chili plants.

Table 18. Results of farmers' interest (Awareness, Interest and Enjoyment) in the use of Trichoderma fungi on chili plants

No	Score	Category	Frequency	Percentage (%)
1	77.77 - 100	High	33	91
2	55.56 - 77.77	Medium	3	9
3	33.33 - 55.55	Low	0	0
	Total		36	100

The table above shows that 33 farmers are in the high category, which is 91%, while 3 farmers are in the medium category of 9%. This means that farmers in Giritirto have a high farmer interest in trichoderma fungi as one of the effective control of chili plant diseases if used. The emergence of interest from a person by realizing that an object has benefits or uses for themselves and the surrounding environment. The emergence of farmer interest is obtained through several indicators of interest itself. Based on the table, the results of the awareness indicator of the friendliness of trichoderma to the environment are 91% (high), where farmers are very aware that trichoderma is included in organic fertilizers that support sustainable agriculture, but the indicator of knowledge about the benefits of trichoderma for soil and chili. Conditions in the field, farmers only know the benefits of trichoderma but not all farmers know the benefits.

Table 19. Achievement of Interest and Awareness Indicators

No	Indicators	Percentage (%)	Category
1	Awareness of the purpose of using trichoderma	83%	High
2	Awareness of the benefits of trichoderma for chili and soil	81%	High
3	Awareness of having easily available materials	84%	High
4	Trichoderma can reduce fertilization costs	84%	High
4	Trichoderma environmentally friendly disease control	82%	High
	Average	83%	Tinggi

Interest is a person’s feeling of being attracted to something, feeling interested in being involved in a certain field (chili cultivation business), shown by behavior that never gives up on following the desired activity. The detailed results of the indicators can be seen in the following table 20.

Table 20. Achievement of Interest Indicators

No	Indicator	(%)	Category
1	Interested in utilizing materials around the house to make/multiply trichoderma	96%	High
2	Interested in knowing how to make/multiply trichoderma	97%	High
3	Interested in applying trichoderma	95%	High
4	Interested in utilizing trichoderma to control diseases in chilies	95%	High
	Average	95%	Tinggi

Based on the table above, it can be seen from the problems in the field, namely fusarium wilt disease in chili plants, farmers have a very high interest with results showing 95% which is included in the high category. This means that farmers are very interested if trichoderma can control fusarium wilt disease in chili plants. Where farmers will feel interested in behaving persistently in activities that are beneficial in their farming activities, namely chili farming. Pleasure or pleasant feelings that give rise to interest, and positive attitudes strengthen interest. This is based on the details of the pleasure indicators can be seen in the following table 21.

Table 21. Achievement of pleasure indicators

No	Indicator	(%)	Category
1	Pleasure in seeking information about trichoderma	High	High
2	Trichoderma is one of the alternatives in controlling fusarium wilt disease in chili	High	High
3	Pleasure if the government provides training on making/multiplying trichoderma fungi	High	High
	Average	96%	High

Based on the table, it is known that farmers will be happy if the government helps in providing facilities in the form of training activities so that farmers can apply trichoderma, expressed in percent as much as 98% is included in the high category. The determination coefficient test is used to determine how much percentage of the influence of the independent variables in the regression model on the dependent variable. The results of the determination coefficient test using (SPSS) in this study are shown in table 22.

Table 22. Determination Coefficient Test Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.862a	.743	.700	2646.70308

a. Predictors: (Constant), availability of facilities and infrastructure, experience, education, role of extension workers, age
b. Dependent Variable: interest

Based on the table 22, it can be seen that the coefficient of determination is 0.743. This shows that the independent variables including age, education, experience, role of extension workers and availability of facilities and infrastructure from related parties have a simultaneous influence on the dependent variable, namely farmer interest of 74.3%. Meanwhile, 25.7% of farmer interest in using trichoderma fungi is influenced by other variables outside this study. Simultaneous tests or simultaneous tests of independent (free) variables include age, education, experience, role of extension workers and availability of facilities and infrastructure from related parties to the dependent (related) namely farmer interest in using trichoderma fungi which can be seen in the following table 23.

Table 23. Results of Simultaneous Multiple Linear Regression Tests

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	608353903.626	5	121670780.725	17.369	.000[b]
	Residual	210151115.263	30	7005037.175		
	Total	818505018.889	35			

a. Dependent Variable: interest
b. Predictors: (Constant), availability of facilities and infrastructure, experience, education, role of extension workers, age

The results of simultaneous regression testing based on the table above, it was found that the sig value was 0.000, which means that age, education, experience, the role of extension workers and the availability of facilities and infrastructure from related parties simultaneously have a significant effect on farmers' interest in using trichoderma sp. The comparison of F count and F table also indicates the simultaneous influence of independent variables. The F count value using SPSS shows a value of 17.369. while the F table value with 36

samples and 6 variables is 3.494. So it can be concluded that the independent variables simultaneously affect farmers' interest in using trichoderma fungi with a comparison of F count (17.369)> F table (3.494). The hypothesis of this simultaneous test can be interpreted as H0 is rejected and Ha is accepted. The results of the partial test or test are to determine the effect of independent variables consisting of age, education, experience, the role of extension workers, the availability of facilities and infrastructure from related parties on the dependent variable, namely farmers' interest in using trichoderma sp. fungi separately, whether there is a real or unreal effect. The results of the partial test influence test of each variable can be seen in the following table. Based on the equation above, the T table is known to be 2.045, so if combined with the SPSS output, the regression coefficient produces table 24.

Tabel 24. Hasil Uji T

Variables	B	T	Sig.	T tabel	Description
Age (X1)	-45.619	-.975	.337	2.045	Not significant
Education (X2)	-656.330	-.957	.346	2.045	Not significant
Experience (X3)	-4.094	-.075	.940	2.045	Not significant
Role of Extension Workers (X4)	1.229	-8.468	.000	2.045	Significant
Availability of Facilities and Infrastructure (X5)	1.261	5.943	.000	2.045	Significant

Based on the data obtained, the following regression equation was obtained.

$y = a + b1X1 + b2X2 + b3X3 + b4X4 + b5X5 + b6X6 + e$

$y = 41317 +(-45.619) + (-656.330)+ (-4.094) + (−1,229) + 1.261 + 0,05$

Multiple linear regression equation based on variables that are partially significant (influential):

$y = (−1,229) + 1.261 + 0,05$

Based on the table, the t count for each independent variable and the t table are known to be 2.045. The partial test of each independent variable with the dependent variable is age, education, and experience does not have a significant effect, while the variables of the role of extension workers and the availability of facilities and infrastructure have a significant effect. The effect of independent variables (age, education, experience, role of extension workers, and availability of facilities and infrastructure) on the dependent variable (interest in using trichoderma sp. fungi) in detail as follows.

Age (X1) listed in the table has a variable coefficient value of 0.45 (-), each increase in the age variable in years, then the dependent variable increases by 0.45. units (score). The results of the partial test state that the t count value is 0.975, where t count <t table (2.045) means H0 is accepted. So it is stated that age does not have a significant effect on farmers' interest in using trichoderma fungi on chili plants. This means that if the age variable increases, there is no change in the farmer's interest variable.

Education (X2) has a variable coefficient value of 0.656 (-), where every addition of one unit of education variable (times), there is an addition to the dependent variable of 0.957 (-) score units. The results of the partial test state that the t-count value is 0.957 (-), where t count <t table 2.045 means that H0 is accepted. So it is stated that education does not have a significant effect on farmers' interest in using trichoderma sp fungi on chili plants, if the education variable experiences an increase, then there is no change in the farmer's interest variable. Farming experience (X3) has a variable coefficient value of 4.094 (-), meaning that every addition of one unit of farming experience variable (year), there is a reduction in the dependent variable of 4.094 score units.

The partial test results state that the t-count value is 0.75, where t-count <t table (2.045) means H0 is accepted, so it is stated that farming experience does not have a significant effect on farmers' interest in using trichoderma sp fungi on chili plants. This means that there is an inverse relationship, where the longer farmers are in farming, the more difficult the habits in cultivation activities are, for example farmers prefer to use chemical fertilizers because they can produce quick effects without knowing the effects in the future. The role of extension workers (X4) has a variable coefficient value of 1.229 (+), meaning that for each additional variable of the role of extension workers, there is an additional dependent variable of 1.229 score units.

The partial test results state that the t-count value is 8.468 where t-count>t table t table (2.045) H0 is rejected, so it can be stated that the role of extension workers has a significant effect on farmers' interest in using trichoderma fungi on chili plants (Ha is accepted). This means that the role of extension workers as information providers, if the intensity of extension workers is high, will have an impact on the level of farmer interest in something if it is beneficial for their farming business, and vice versa, if the variable role of extension workers is lacking, the variable of farmer interest will also decrease.

Availability of facilities and infrastructure (X5) has a variable coefficient value of 1.261 (+), meaning that for every additional variable of availability of facilities and infrastructure, there is an additional dependent variable of 1.261 score units. The results of the partial test state that the t-count value is 5.943, where t count> t table (2.045) meaning that H0 is rejected, so it is stated that the availability of facilities has a significant effect on farmers' interest in using trichoderma fungi on chili plants (Ha is accepted) meaning that it has a cause and effect

relationship with farmers' interest. Therefore, it is recommended to provide the availability of facilities and infrastructure in the form of training to support the development of trichoderma fungi and so on.

This study is strengthened by various previous studies showing that the success of implementing environmentally friendly agricultural technologies such as Trichoderma is highly dependent on the effectiveness of extension and the availability of infrastructure. Yan et al. [25] revealed that the match between farmers' needs and extension services increased the adoption of biological pesticides, while Canacan et al. [34], emphasized that targeted extension has a major influence on farmers' decisions in adopting IPM technology. Singh et al. [35] also emphasized the importance of training in improving productivity and adaptation of agricultural technology. These studies are supported by the findings of Bhandari et al. [36] which states that extension plays an important role in increasing farmers' awareness of the benefits of *Trichoderma*. The current study refines previous studies with a more comprehensive quantitative approach through validity, reliability, and linear regression tests, and clearly shows that the role of extension workers and the availability of infrastructure have a significant effect on farmers' interest in using *Trichoderma*, making it a strong foundation in developing sustainable agricultural policies and programs.

The novelty of the results of this study lies in its approach that empirically identifies the simultaneous and partial influence of various factors on farmers' interest in using *Trichoderma* fungi in chili cultivation, with a special focus on the role of extension workers and the availability of infrastructure as significant dominant variables. This study provides a new contribution by showing that traditional factors such as age, education level, and farming experience do not have a significant effect on the interest in adopting these biological innovations. These findings reinforce the importance of institutional interventions and facility support in accelerating the adoption of environmentally friendly technologies among farmers, while enriching the literature related to the adoption of agricultural innovations based on antagonistic microorganisms at the local farmer level.

The implications of this study indicate that increasing the intensity and quality of the role of agricultural extension workers and the provision of adequate facilities and infrastructure can be key strategies in encouraging the adoption of biological technologies such as *Trichoderma* among chili farmers, so that environmentally friendly agricultural programs can be more effective and targeted. This study can be a basis for the government and extension institutions to design more applicable training and wider accessibility of biological materials at the farmer level. The limitation of this study is that the scope of respondents is limited to only one village so that it does not reflect the diversity of farmer characteristics in a wider area.

4. CONCLUSION

The Based on the results of the study, it can be concluded that farmers in Giritirto Village show a high level of interest in using *Trichoderma sp.* for chili cultivation, primarily influenced by the role of agricultural extension workers and the availability of facilities and infrastructure, while factors such as age, education, and farming experience have no significant effect. This indicates that external support, such as effective extension services and access to environmentally friendly agricultural technologies, plays a crucial role in encouraging adoption. For future research, it is recommended to explore additional variables such as trust in new technologies, economic considerations, and the effectiveness of different extension methods to gain a more comprehensive understanding of how to promote sustainable agricultural practices.

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