THE INFLUENCE OF AGRICULTURAL COUNSELING, PERCEPTION AND MOTIVATION OF FARMERS ON FARMERS' BEHAVIOR IN INCREASING RICE PRODUCTION (Case Study in Air Putih District, Batu Bara Regency)

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ARTICLEINFO	ABSTRACT
Keywords: Agricultural Extension, Perception, Motivation Behavior of Farmers	This study aims to analyze the level of farmer behavior in increasing rice production and to analyze the influence of agricultural extension, perceptions and motivation on farmer behavior in increasing rice production in Air Putih District, Batu Bara Regency. This research was conducted in Air Putih District, Batu Bara Regency and was a quantitative descriptive study. There were 941 research respondents from 23 middle class food crop farming groups, the number of research respondents based on the Slovin formula was 90 people which were then divided proportionally per farmer group spread across Air Putih District, Batu Bara Regency. Primary data collection uses a questionnaire that has been tested for validity and reliability. Data analysis was used to measure the level of farmer behavior in increasing rice production using a Likert scale and to see the effect of agricultural extension, perceptions and motivation on farmer behavior in increasing rice production using multiple linear regression. The results showed that the behavior of farmers in increasing rice production in Air Putih District, Batu Bara Regency was interpreted very highly with a score of 98.13 percent, where agricultural extension, perceptions and motivation had a significant effect on farmer behavior in increasing rice crop production in Air Putih District. Coal.
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1. INTRODUCTION

The country of Indonesia is one of the agricultural countries in the world, the agricultural sector plays an important role in improving and developing Indonesia's national scale economy. This is supported because Indonesia is located on the equator, so it has abundant agricultural natural resource potential, a tropical climate and relatively good soil fertility, these are the main supporting factors so that most of Indonesia's territory is utilized for activities in the agricultural sector.

The agricultural sector which has the most vital and most influential role on the survival of the community is the food crops sub-sector. Efforts to provide staple foods for the Indonesian population and maintain the stability of the country's food security are the most important components of the food crops sub-sector. Meeting the population's need for food crop products, which are increasing day by day because the rate of growth and population growth is increasing rapidly, is the main function of this food crop sub-sector. Food crop commodities act as the main food source for people in Indonesia, namely rice products and their processed products derived from rice plant production, so that the production and productivity of rice plants must be grown and developed from time to time.

Increasing rice farming is the main target of the Indonesian government, with the main goal being that rice crop production, rice plant distribution and public consumption of rice plant products can be met evenly and sustainably. But in reality, the production of rice plants is inversely proportional to the goals to be achieved, as is the case in Batu Bara District. The condition of rice farming in Batu Bara Regency has decreased in terms of rice production. In 2017, Batu Bara Regency had a total rice harvest area of 43,546 ha with a rice plant production figure of 252,268.08 tons of dry milled unhusked rice. Whereas in 2021 the harvested area of rice plants has decreased to 28,994.18 ha with a production rate of rice plants of 160,909.46 tons of dry milled grain, or a decrease in the harvested area of rice plants by 37.89% and a decrease in the total production of rice plants by 36. 21%.

Increasing the production of rice plants in Batu Bara Regency is carried out by increasing the production of rice plants in each sub-district. The district that has the highest planting area and

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productivity of rice plants in Batu Bara District is Air Putih District. The area of rice planting land in Air Putih District is 25.34% of the total area of rice planting land in Batu Bara Regency, while the total crop production is 27.72% of the total production as a whole.

The many agricultural development efforts that have been carried out by the government should have had a positive impact on increasing the harvested area of rice plants and the production and productivity of rice plants, but the production of rice plants in Air Putih District in 2017 reached a production of 66,733.78 tons but in 2021 experienced a decrease in rice crop production to 44,600.92 tons, or a 33.17% decrease in rice crop production.

The increase in rice yields as mandated by laws and regulations on agricultural extension is one of which is realized by improving and improving the procedures for implementing a sustainable and well-organized agricultural extension system process. This agricultural extension activity is carried out by utilizing farmer groups and increasing the function of farmer groups in the midst of social life in distributing technological innovations to increase rice production, where each of the farmer group functions is expected to have a positive impact on farmer motivation and perceptions regarding changes in farmer behavior in increasing the production of rice plants in their respective planting areas.

Based on the results of observations at the research sites, the agricultural extension system was well implemented, directed and structured. This can be seen by the running of the agricultural extension system which includes training conducted for agricultural extension officers, well-scheduled and clear visits to farmer groups and supervision carried out by the leadership in terms of evaluating and monitoring the implementation of agricultural extension in each agricultural extension work area. availability of 1 agricultural extension worker for one village, availability of definitive plans for farmer groups and definitive plans for farmer group needs, availability and arrangement of agricultural extension programs for each village prepared with a participatory approach at each level, and so on up to the district level, there is an annual work plan agricultural extension officers and the availability of group visit schedules in each village in the area assisted by extension agents.

Based on this, the author's interest arose in conducting research with the title Effects of Agricultural Extension, Perceptions and Motivation on Farmer Behavior in Increasing Rice Production in Air Putih District, Batu Bara Regency. The objectives to be achieved in this study were to identify and analyze farmer behavior in increasing rice crop production and to analyze agricultural extension, perceptions, motivation towards farmer behavior in increasing rice crop production.

2. METHODS

This research was conducted in Air Putih District, Batu Bara Regency from October to November 2022, which is a quantitative descriptive study. Descriptive analysis is used to determine the level of farmer behavior in increasing rice production, and Quantitative Analysis is used to analyze the effect of the independent variables on the dependent variable. Respondents in this study were all members of the farmer group with an intermediate group class of 941 people spread across Air Putih District, Batu Bara Regency. Then obtained 90 samples using the following formula:

$$n = \frac{N}{N\,(d)^2 + 1}$$

Information:
n   = Number of samples
N   = Total population
d   = Precision used in research.

In order to distribute the sample evenly within each farmer group, the method of determining the number of samples proportionally is used with the following formula:

$$Ni = \frac{Nk}{N}\,x\,n$$

Information:
Ni   = Number of samples from each farmer group
Nk   = Number of farmers in each farmer group
N   = The total number of respondents

n   = Number of samples set.

Data collection was carried out by distributing questionnaires to sample farmers which were then tabulated and corrected before being analyzed. The questionnaire used has been tested for validation with the determination of r-count> r-table and the reliability test with the determination of the Cronbach Alpha value> 0.07.

Analysis of the level of farmer behavior in increasing rice production in Air Putih District, Batu Bara Regency used a Likert scale, with the formula:

$$Farmer\ Behavior\ Level = \frac{Actual\ Score}{Ideal\ Score}\ x\ 100\%$$

Information:
Actual Score   = Score obtained from the questionnaire
Ideal Score   = Maximum score from the questionnaire

The total score obtained from the calculation is grouped into 5 assessment criteria, the results obtained can be interpreted as follows:

Total score 0% - 20%   = Very low farmer behavior
Total score 20.1% - 40% = Low farmer behavior
Total score 40.1% - 60% = Fair farmer behavior
Total score 60.1% - 80% = high farmer behavior
Total score 80.1% - 100%   = Very high farmer behavior

Analysis of factors influencing behavior
To determine the effect of agricultural extension, perceptions and motivation on farmer behavior in increasing rice production, it is necessary to know in advance the level of correlation between agricultural extension, farmer perceptions, farmer motivation and farmer behavior in increasing rice crop production, then proceed with regression analysis with the help of the program. SPSS.

Spearman rank correlation test
To find out the relationship or to test the significance of the relationship of each connected variable, Spearman's rank correlation is used (Sugiyono, 2008), while the correlation formula is:

$$rs = 1 - \frac{6\ di^2}{N^3 - N}$$

With the provisions that
rs = Spearman's rank correlation coefficient,
N = number of samples and
di = difference in rank between variables.

To test the significance level of the relationship, the z test was used, because more than 30 samples were taken (N> 30) with a 95% confidence level with the formula, (Sugiyono, 2010):

$$Z = rs\sqrt{(n-1)}$$

By criteria
- If z-count > z-table (α = 0.05) it means that H_0 is rejected, meaning that there is a significant relationship between the independent variable (X) and the dependent variable (Y)
- If z-count < z-table (α = 0.05) it means that H_0 is accepted, meaning that there is no significant relationship between the independent variable ((X) and the dependent variable (Y)

Multiple Regression Test
Measuring the magnitude of the level of influence of agricultural extension, perceptions and motivation on farmer behavior in increasing rice production and also to predict the magnitude of the

value of farmer behavior in increasing rice crop production using agricultural extension, perceptions and motivation of the farmers themselves. Formulates the following equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

Information:
Y   = farmer behavior in increasing rice production,
X_1 = agricultural extension,
X_2 = farmer's perception,
X3   = motivation of farmers,
a   = constant,
β   = regression coefficient

The value of determination (R^2) is to investigate the accuracy of the form of influence carried out to show the magnitude of the value of agricultural extension ability, perception and motivation explaining its influence on farmer behavior in increasing rice crop production, expressed using percentase, then the value obtained can be included in the model on the regression used. The determination value (R^2) is in the range of 0 as the lowest value to 1 as the highest value, if the value obtained is close to 1, then the model can be said to be good, and vice versa. If the value obtained is far from 1 or close to 0, then the model used is not good.

The formulation for the coefficient of determination is as follows:

$$R^2 = \frac{SS_{REg}}{SS_{Tot}} \quad \text{atau} \quad R^2 = \frac{\sum (\hat{Y} - \bar{Y})^2}{\sum (Yi - \bar{Y})^2}$$

With the provisions that
Y'   = The estimated value of the dependent variable,
Y   = Average value of the dependent variable,
Yi   = Observation value and
R^2 = Coefficient of Determination.

In testing the hypothesis, the F test will be used with the aim of knowing how the influence of agricultural extension, perceptions and motivation together on farmer behavior in increasing rice crop production. the formulation used is as follows:

$$F_{hitung} = \frac{(R^2)/(k-1)}{(1-R^2)/(n-k)}$$

F_{Tabel} = (k-1); (n-k): α

With the provisions that R2 = coefficient of determination, k = number of regression coefficients, n = number of samples and α = critical value.

The test criteria are as follows:

- If F-count > F-Table, or sig < 0.05, it means that Agricultural Extension, Perception and Motivation tested simultaneously have a significant effect on Farmer Behavior in Increasing Rice Production;
- If F-count ≤ F-table, or sig > 0.05, it means that agricultural extension, perceptions and motivation tested simultaneously have no significant effect on farmer behavior in increasing rice production.
    The influence of agricultural extension, perceptions and motivation partially on farmer behavior in increasing rice crop production is used with the t test. the formulation used is as follows:

$$t_{count} = \frac{bi}{Se(bi)}$$

Where:
bi = regression coefficient to –i, with degrees of freedom n-k-1
Sebi = root of variance (bi)
The test criteria are as follows:
- If t-count ≥ t-table or sig < 0.05 then agricultural extension, perceptions and motivation have a significant effect on farmer behavior in increasing rice production partially;
- If t-count ≤ t-table or sig > 0.05 then agricultural extension, perceptions and motivation have no significant effect on farmer behavior in increasing rice production partially.

3.   RESULTS AND DISCUSSION
Characteristics of respondents
Characteristics of respondents based on age

Table 1: Characteristics of Respondents by Age

No	Criteria	Total (person)	Percentage (%)
1.	≤ 24,8 Years	-	-
2.	24,9 Years – 34,6 Years	2	2,22
3.	34,7 Years – 44,4 Years	26	28,89
4.	44,5 Years – 54,2 Years	29	32,22
5.	≥ 54,3 Years	33	36,67
	J u m l a h	90	100

Based on Table 1, that the condition of the age of the respondents at the time of this study was in the range of more than 24 years. However, the respondents were dominated by farmers aged more than 54 years, amounting to 33 people or equivalent to 36.67% of the number of respondents. This illustrates that the rice farmers in the research location are dominated by older people, the younger generation or what is commonly called the millennial generation, not many are directly involved in rice farming activities. this is probably due to the low interest of the younger generation in doing rice farming, and tend to choose other fields as the main source of livelihood. Harniati and Anwarudin, 2018 in Anggini, et al (2019) also concluded the same thing in their research.

The low presence of the younger generation in the field of rice farming certainly has an unfavorable impact in the perspective of efforts to increase rice production. As we all know that the younger generation certainly has the physical ability and good enthusiasm for doing something, in this case carrying out farming activities, and is considered to have a responsive attitude towards introduced technological innovations, in contrast to farmers who are older and tend to prefer to do things which is usually done in rice farming activities. The same thing was conveyed by Dewandi, 2010 in Anggini, et al (2019) in the research they conducted.

Characteristics of respondents based on the level of formal education

Table 2: Characteristics of Respondents Based on Formal Education Level

No	Criteria	Total (person)	Percentage (%)
1.	College	-	-
2.	High School Equivalent	49	54,44
3.	Junior high school equivalent	32	35.56
4.	SD Equivalent	9	10
5.	No School	-	-
	J u m l a h	90	100

Referring to the data in Table 2, the formal educational background of the respondents is more dominant with the level of education at senior high school (SMA) or equivalent, namely 49 respondents (54.44%). This illustrates that the average respondent has a relatively high education. There were no respondents who did not go to school or did not complete elementary school education, but there were also no respondents who had formal education up to the tertiary level.

The relatively good formal education of these respondents has had many positive impacts on the rice farming activities they manage. Hadiyati, 2011 in Anggini (2019) states that education can broaden

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the interaction of these individuals, good education results in a person having no difficulty interacting in daily life and easily accepting the technological innovations provided.

Formal education that is quite good and relatively high will also make it easier for someone to adopt new things that are better, because a person's intellectual level is generally built from education. The higher the education, the easier it is to absorb technological innovations related to increasing yields or increasing the productivity of rice plants. The same was stated by Qonita (2012) in his research that a person's maturity or readiness to accept or reject technological innovations offered from outside is influenced by height. the low level of education that the individual has passed.

Characteristics of respondents based on Land Area

Table 3: Characteristics of Respondents Based on Land Area

No	Criteria	Total (person)	Percentage (%)
1.	1.71 – 2.00 Ha	-	-
2.	1.41 – 1.70 Ha	1	1,11
3.	1.11 – 1.40 Ha	7	7,78
4.	0.50 – 0.80 Ha	20	22,22
5.	No School	62	68,89
J u m l a h		90	100

Based on Table 3 it can be concluded that the respondents used in this study had a land area in the range of 0.5 Ha – 1.10 Ha with a total of 82 people or equivalent to 91.11% of the total respondents. Respondents who owned land of more than 1 hectare were only 8 people or equivalent to 8.89% of the total respondents. This indicates that the area of land owned by most of the respondents is still relatively narrow.

Referring to the data on the area of land ownership managed by farmers to cultivate rice plants in this study, rice crop farmers can be classified as poor farmers. The area of agricultural land ownership describes the economic status of a farmer, the wider the agricultural land owned, the higher the economic status in society. The area of agricultural land owned is usually divided into three groups, namely land area of more than 2.5 Ha are grouped into rich farmers, farmers who have land of 1 – 2.5 Ha are grouped into medium farmers and if the planting land is less than 1 Ha are grouped into poor farmer. This is in accordance with the theory put forward by Wahyudin, 2005 in Burano and Siska (2019) in their research.

The area of plantation land ownership can also be one of the benchmarks used in examining or analyzing the level of farmer adoption of technological innovations. Farmers who have large land areas tend to be more courageous in implementing technological innovations compared to farmers who have smaller planting areas. This is because farmers who have large land areas usually have more established finances and capital, so that the failures that are feared by farmers in implementing technological innovations to increase the productivity of rice plants do not have such a big effect when compared to farmers who have smaller land areas, generally they have status lower economy with relatively smaller capital capacity.

Characteristics of respondents based on length of time doing business

Table 4: Characteristics of Respondents Based on Length of Business

No	Criteria	Total (person)	Percentage (%)
1.	> 20 years	23	25,56
2.	15.1 Years – 20 Years	18	20
3.	10.1 Years – 15 Years	18	20
4.	5.1 Years – 10 Years	23	20,56
5.	≤ 5 years	8	8,89
J u m l a h		90	100

Table 4 explains that the condition of the level of experience possessed by farmers or the duration of the respondents carrying out paddy rice farming activities is dominant for more than 10 years, where the number of respondents who have attempted lowland rice farming in the span of more than 10 years is 59 people or equivalent to 65.55 % of the number of respondents. The duration of carrying out rice farming certainly has an influence on how to solve problems that arise in farming activities.

The duration of farming can affect the level of knowledge, because the longer a person does rice farming, the more experience he has in dealing with problems that arise, in other words, more experienced farmers will certainly be more skilled in managing their farming compared to novice farmer. The experience of farming rice plants is an asset for farmers to assess whether a technological innovation is feasible or not for them to apply to their farming. The same thing was confirmed by Krisnawati, et al (2013) in the research they conducted.

Characteristics of respondents based on the number of dependents

Table 5: Characteristics of Respondents Based on the Number of Dependents

No	Criteria	Total (person)	Percentage (%)
1.	> 8 People	-	-
2.	7 People – 8 People	-	-
3.	5 people – 6 people	15	16,67
4.	3 people – 4 people	55	61,11
5.	< 3 people	20	22,22
	J u m l a h	90	100

Based on the data in Table 5, it can be concluded that the highest number of dependents is in the range of 3-4 people, 55 respondents or equivalent to 61.11% of the total number of respondents in this study.

The number of dependent family members has an influence on the level of welfare owned by the family, this is because the greater the number of dependents in the family, the greater the costs required to support the family and meet the needs of each dependent family member .

The number of family members who are dependents also has an influence on the level of willingness of the farmer as the head of the family and his wife to work harder to support their respective families. Purwanto and Taftazani (2018) explain that the number of dependent family members has an influence on the level of family economic welfare, the influence that arises as a result of the number of dependent family members does not occur directly, but involves other aspects, such as income levels and level of spending in the family. The size of a family's expenditure level is strongly influenced by the number of family dependents it has, this is due to the increasing number of family dependents, the need for consumption per day for the family will also increase.

Farmer Behavior in Increasing Production

Actions that can actually be observed and analyzed are the intentions of behavior. The occurrence of behavior in a person generally begins with the knowledge possessed by that person, the source of the knowledge possessed is often obtained by participating in counseling activities, either directly or virtually which results in social media, then this knowledge increases as a result of an assessment in his mind, which then develops into an attitude towards something that is done by someone, then develops into an ability to do or do someone called skills.

The behavior of farmers in increasing the production of rice plants in this study obtained the following results:

$$Farmer\ Behavior\ Level = \frac{4.416}{4.500} \ x\ 100\% = 98,13\%$$

Based on these calculations, it can be interpreted that the behavior of farmers in increasing rice production can be interpreted as very high (98.13%). Farmer behavior (knowledge, skills and attitudes) in increasing rice production is interpreted very highly. This is certainly influenced by several things, including a good and relatively high level of formal education and the experience possessed by farmers in farming who tend to be long or experienced.

Increasing rice production will certainly have a positive effect from the point of view of increasing income and the economy owned by farmers in meeting the needs and costs of daily living for themselves and their families. This encourages farmers to improve their behavior in the perspective of increasing knowledge about the latest and most relevant technological innovations to the conditions of the farming they manage, improve their skills in the application or implementation of technological innovations to increase rice production, and instill determination and will within them to always apply technological

innovations to increase the intended production of rice plants in each growing season on the cultivated land. That way, the overall behavior of farmers in increasing rice crop production is good.

Multiple linear regression

Table 6. Results of Multiple Linear Regression Analysis
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,595	5,587		,643	,522
	Agricultural Extension	,592	,082	,582	7,206	,000
	Perception	,194	,053	,296	3,688	,000
	Motivation	,142	,048	,238	2,932	,004
a. Dependent Variabel : Farmer's Behavior						

b. F_{Hitung} = 23.540
c. F_{Tabel} = 2.709
d. t_{Tabel} = 1.988
e. R = 0,671
f. R^2 = 0,451
g. Signifikansi = 0,05

Based on the results of the data analysis output in Table 10, the R value in multiple linear regression shows the value of the multiple correlation between agricultural extension, perceptions and motivation with farmer behavior in increasing rice crop production. the relationship between agricultural extension, perceptions and motivation on farmer behavior in increasing rice production in this study was 0.671, this indicates that the relationship between these variables is relatively high or close. This is because the magnitude of the relationship between agricultural extension variables, perceptions and motivation towards farmer behavior in increasing maximum rice crop production is 1, if it is close to 1 then the relationship is getting closer, whereas if it is close to 0 then the relationship is getting further away. The same was conveyed by Priyatno, (2012).

The coefficient of determination in the analysis of the influence of agricultural extension, perceptions and motivation on farmer behavior in increasing rice production as shown in table 4.6 above, shows that the coefficient of determination (R^2) is 0.451. This value states that the agricultural extension, perception and motivation variables can explain farmer behavior in increasing rice production by 0.451 or equivalent to 45.1% and the remaining 54.9% can be explained by other variables not used in this study

F Test (Simultaneous Test)
The test results show that the F-value for the equation of farmer behavior in increasing rice production is 23,540 and the F-table in this study is 2,709. This concludes that the calculated F-value is greater than the F-table value or by equation 23,540 > 2.709 and Sig. 0.000 <0.05, with this in mind, it can be explained that agricultural extension, perceptions and motivation together have a significant effect on farmer behavior in increasing rice production.

The behavior of farmers in increasing rice production in this study was influenced by agricultural counseling, perceptions and motivation. Thus, if agricultural extension related to efforts to increase rice production by introducing the latest technological innovations is improved, building positive perceptions of the introduced technological innovations and building farmer motivation to carry out technological innovations to increase rice crop production, the behavior of farmers in increasing rice crop production will changed.

t test (Partial Test)
The influence of agricultural extension on farmer behavior in increasing rice production.
Agricultural extension has a significant effect on farmer behavior in increasing rice crop production. This can be explained by looking at the regression coefficients that have been analyzed, where the t-count value (7.206) > t-table (1.988) or the sig value (0.000) < 0.05. The amount of influence given by agricultural counseling on farmer behavior in increasing rice crop production is 0.592. Thus it

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can be explained that, if agricultural extension is increased by one unit, the behavior of farmers in increasing rice production increases by 0.592 or the equivalent of 59.2%, and vice versa if agricultural extension is reduced by one unit, the behavior of farmers in increasing rice production will also decrease of 0.592 or equivalent to 59.2%.

Agricultural counseling has a positive influence on farmer behavior in increasing rice production because agricultural extension is an attempt to change farmer behavior related to increasing knowledge, skills and attitudes of farmers, increasing the functions of farmer groups as learning classes, vehicles for cooperation and also as production units. This certainly has a positive impact in the perspective of changes in farmer behavior in increasing rice crop production. The goal to be achieved by implementing the agricultural extension process in this context is to increase farmers' knowledge so they know how to increase rice crop production, change farmer skills so they are able to increase rice crop production and change farmers' attitudes so they want to apply technological innovations to increase rice crop production, things Kartasapoetra, 1977 in Julio, et al (2014) stated that the implementation of agricultural extension activities is part of an effort that can be implemented to change the behavior of farmers and their families so that they know, have the ability and are willing to solve the problems they face by utilizing available resources. available in efforts to increase farm production and improve their welfare.

Successful implementation of agricultural extension activities will certainly have a positive effect on managed crop production. One indicator that can be used as a measure of the success of the implementation of agricultural extension is by looking at the behavior of the main players and business actors who know, are able and willing to choose and use profitable technological innovations in every plant cultivation activity, as well as the capabilities of the main actors and business actors in overcome the problems encountered in their rice farming activities, including the ability to overcome problems due to attacks by plant-disturbing organisms, maintain a sustainable and sustainable agricultural system, by maintaining soil and water quality. The same thing was conveyed by Kartasapoetra, 1997 in Julio, et al (2014) as a result of the research they conducted.

The influence of perceptions on farmer behavior in increasing rice production.

Perception has a significant effect on farmer behavior in increasing rice production. This can be explained by looking at the regression coefficients that have been analyzed, where the t-count (3.688) > t-table (1.988) or the sig value (0.000) < 0.05. The magnitude of the influence exerted by perceptions of farmer behavior in increasing rice crop production in this study was 0.194. This explains that, if perceptions are increased by one point, then the behavior of farmers in increasing rice production will increase by 0.194 or 19.4%, and vice versa if perceptions are lowered by one unit, the behavior of farmers in increasing rice crop production will also decrease by 0.194 or equivalent to 19.4%.

Farmers' perceptions generally influence their behavior in determining whether a given technological innovation can be accepted or rejected, in the context of technological innovation to increase rice production. This happens because the end result of someone's observation or analysis regarding technological innovation is the conclusion that is in the mind, or in general the conclusion determines whether the technological innovation is good or bad. If the decision or conclusion built within states that the technological innovation is good, then the farmer will accept it whereas if it is considered bad, it will be rejected, the same opinion was conveyed by Widiyastuti, et al (2016) in the report on the results of the research they conducted .

Farmers as the main actors in farming activities always make observations of recommended technological innovations in an effort to increase rice production, these observations are often made in the process of agricultural extension, or you can also look directly at successful planting locations. Armed with the experience and knowledge possessed by these farmers, then concluded the results of observing these innovations. The good or bad of an innovation is often measured by the end of the process, namely an increase in the production of cultivated plants. The same thing was conveyed by Rakhmat, 2007 in Ali, et al (2018) in his research.

The effect of motivation on farmer behavior in increasing rice production.

Motivation has a significant influence on farmer behavior in increasing rice production. This can be explained by looking at the regression coefficients that have been analyzed, where the t-count value (2.932) > t-table (1.988) or the sig value (0.004) < 0.05. The magnitude of the influence given motivation on farmer behavior in increasing rice crop production is 0.142. This explains that, if motivation is increased by one point, then the behavior of farmers in increasing rice production will increase by 0.142

or 14.2%, and vice versa, if motivation is reduced by one point, the behavior of farmers in increasing rice production will also decrease by 0.142 or equivalent to 14.2%.

The motivation or encouragement that exists within the farmer is an important aspect of changing the behavior of these farmers in an effort to increase the production and productivity of their rice plants. With increased production, their income will certainly increase, so that they can meet the needs of their respective families.

The elements that influence the emergence of a person's behavior in increasing rice production broadly originate from motivation or encouragement from within the person, just as there are things that motivate a farmer to do or not do something related to his farming activities. The idea of motivation is then expanded from here, with motivation being defined as the desire to gain more prestige, power and recognition. According to Sri, 2010 in Idrus, et al (2021) motivation can also be considered as a reference and basis for obtaining success in all aspects of life based on increasing the capacity of farmers, education and training in developing insights for each individual.

Farmers with the motivation or encouragement to be able to provide for everything they need in their lives, it turns out that they have a strong desire to carry out rice farming as well as possible, the goal is to be able to produce crop production that can be used to meet the daily needs of farmers and their families. This research is in line with Lestari et al, 2019 in Margawati, et al (2020) which provides a statement that the main factor and has a close relationship in meeting daily needs, fulfilling income and increasing the welfare of farmers is the need for existence, this is because farmers hope to be able change his life into a better life in the future. The motivational drive for the need for existence is also able to make farmers try harder in carrying out their farming activities, so that it has an impact on improving farming so that it will certainly improve rice crop production.

4.   CONCLUSION

The behavior of farmers in increasing rice production in Air Putih District, Batu Bara Regency is very high, namely 98.13%. Simultaneously agricultural extension, perceptions and motivation influence farmer behavior in increasing rice crop production in Air Putih District, Batu Bara Regency. Partially, agricultural extension, perceptions and motivation each influence the behavior of farmers in increasing rice crop production in Air Putih District, Batu Bara Regency.

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