West Science Agro
Vol. 3, No. 01, February 2024, pp. 14~31

Risk Management Analysis of Organic and Inorganic Rice Farming in Serdang Bedagai Regency

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Article Info

Article history:

Received December, 2024
Revised February, 2024
Accepted February, 2024

Keywords:

Risk management,
organic rice

ABSTRACT

Farming risk management is a step that can affect the production results of the farming. This study aims to analyze the strategies used by farmers in managing risks in the field. The analysis method used is Coevisian variation to see the level of risk of farming, measuring perception using a likert scale and using 3 strategy management, namely Ex-ante, interactive and Ex-post. The results of this study show that the level of risk of farming is low and the perception is positive.

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1. INTRODUCTION

In the early 2000s, organic farming was known in Indonesia, especially for rice crops and horticulture. Rapid expansion has led to the incorporation of organic practices in various agricultural sectors, such as vegetables and coffee. This is an example of a broader shift towards sustainable agricultural practices in response to environmental concerns and market demand for healthier food options (Shiotsu et al., 2015; Kanedi et al., 2021; David & Ardiansyah, 2016).

Organic agriculture is an alternative option that can be considered in the long term and is expected to increase land production and fertility so that the farmer's economy can be more stable in the future (Sumarno, 2006 in (Fauzi & Martadona, 2019). Organic agriculture is a unified system that starts from production management to the end that encourages development sustainability of the agro ecosystem, including existing biodiversity, biological cycles and biological activities.

In Indonesia, inorganic agriculture, also known as conventional agriculture, has been influenced by various socio-economic and environmental factors. These factors form a complex relationship between agricultural productivity, sustainability, and policy frameworks. The agricultural sector is still a pillar of Indonesia's economy, making a significant contribution to employment and food security. However, due to land sustainability issues, climate change, and modernization demands, current practices and policies must be thoroughly examined.

The government's approach to increasing agricultural productivity is to expand agricultural land through initiatives such as the Merauke Integrated Food and Energy Estate (MIFEE). The aim of this policy is to improve food security, but there are questions about environmental sustainability and how it impacts local communities (Prasada & Nugroho, 2022; Chairunnisya,

2024). Many variables affect the sustainability of agricultural land. These include the added value of agriculture, forestry, and fisheries, rural population growth, and human resource development (Prasada & Nugroho, 2022). To maintain a balance between maintaining the ecological integrity of the land and improving agricultural yields, these components are essential.

North Sumatra is one of the regions that has organic rice plants, more precisely in Serdang Bedagai Regency. In the Serdang Bedagai Regency area, there are several villages that produce organic rice, among them are Lubuk Bayas Village, Tanah Merah Village and Pematang Setrak Village. Where the three villages are organic rice development villages that have received LeSOS certificates (Seloliman Organic Certification Institute, respectively with Numbers 176-LSPO-005-IDN-12-16,287- LSO-005- IDN-12-18, and 175-LSPO-005-IDN-12-16 for the scope of organic rice.

Table 1. Land Area, Production and Average Organic Rice in Serdang Bedagai Regency

Year	Land (Ha)	Presentation (%)	Production (Tons)	Average Production (%)
2019	6,00	29,06	6,40	25,60
2020	6,64	32,18	7,60	30,4
2021	8,00	38,76	11	44
Sum	**20,64**	**100**	**25**	**99,4**

Source : Organic Quality Assurance (PAMOR), 2022.

Based on the data in Table 1.1, we can see that in 2019 the land area owned was 6.00 hectares with organic rice production of 6.40 tons with an average production of 25.60%. For 2020 the land area owned is 6.64 Ha with a production of 7.60 tons with an average production of 30.4% and in 2021 the land area owned is 8.00 Ha with a production of 11 tons with an average production of 44%.

Table 2. Land Area, Productivity and Inorganic Rice Production in Serdang Bedagai Regency

Year	Land (Ha)	Productivity (ton/ha)	Production (ton/ha)
2021	49 091,03	55,06	270 270,84
2022	50 940,35	56,92	289 938,03
Sum	**55931,38**	**111,98**	**560208,87**

Source: North Sumatra Provincial Central Statistics Agency 2023

Based on the data in Table 1.2, it can be seen that the area of Inorganic rice land in 2021 is 49 091.03 with a productivity of 55.06 tons/ha and a production of 270 270.84. For 2022, the land area has increased, so the total land area in 2022 is 50 940.35 and the productivity is 56.92 Tons/Ha with a production of 289 938.03 Tons/Ha.

From the incidents experienced by farmers, managing the risks faced by individuals and their handling are also different. Therefore, there are several categories of behavior of a farmer in facing various risks, including risk neutral, risk taker and averse. Where every problem that

Each farmer determines how much risk and income they will receive in the future. There is a risk in organic rice farming, causing a management to face losses that will be incurred. The business carried out is expected to be more economical with the existence of risk management, so it is necessary to study how farmers control the risks of organic and inorganic rice farming.

Based on the description above, the researcher is interested in conducting a study with the title "Risk Management Analysis of Organic Rice and Anognant Rice Farming in Serdang Bedagai Regency"

2. LITERATURE REVIEW

2.1 Organic Rice

Organic agriculture is based on the use of pesticides and fertilizers derived from livestock waste with the aim that organic plants optimize the health and productivity of

interdependent communities from various lives in the soil, plants, animals and humans. Currently, the organic crop program is welcomed by the community even with various understandings.

2.2 Organic Rice

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2.2.1 Risk Management

Agricultural risk management is an important aspect to ensure the sustainability and productivity of agricultural businesses. It includes a variety of strategies and tools designed to mitigate risks associated with agricultural production, including environmental, economic, and operational uncertainties. The current literature highlights several innovative approaches and technologies that can improve risk management in agriculture.

2.2.2 Types of Risks

Risks in agriculture are included in speculative risks (Djohanputro, 2008). Speculative risk is a risk that provides the possibility of being able to gain profit or loss or not profit and no loss. Speculative risk itself is often called dynamic risk.

The occurrence of risks in the agricultural sector is due to several factors, namely:

1) Production risks, for example climate, genetic mutations, pests and disease attacks.
2) Price risk, with the variation of prices in the field, will affect the expectations of the market and consumer demand.
3) Business and financial risk where this risk is related to the high level of capital, both investment and loans.
4) Technology risk is the ability of farmers to adopt technology for the advancement of farming which has an impact on cost and time efficiency.
5) Risk of damage, such as theft and inflation.
6) Social and legal risks are related to regulations that have been set by the government.
7) Risks related to humans, both behavior and endurance of the body itself. (Sodjana, 2007).

2.3 Theoretical Foundations

2.3.1 Risk Behavior Theory

There are three categories for farmers' behavior in dealing with risks, including:

1) Risk Averse, which is a behavior of a farmer who is more inclined to avoid the risks he faces.
2) Risk Neutral, which is a behavior of farmers where there is or is not a These risks will not affect a decision in the cultivation business.
3) Risk Taker, which is the behavior of farmers who are brave enough in a situation when faced with risky choices. (Kahan, 2008).

2.3.2 Risk Theory

Risk in agriculture includes a possibility of profit and loss that will be obtained where the level of risk is determined before an action is taken based on an expectation or the thinking of a farmer in taking a decision step (Siregar in Soekartawi, 1993). Risk is an opportunity that will cause a measurable loss (Robinson, 1987).

2.3.3 Risk Management Theory

Risk management is an implementation of management functions in managing the risks faced, be it risks in the organization, community and family (Djojosoedarso, 1999). Risk management is a directed and proactive process with the aim of accommodating the possibility of failure in one part of an existing transaction or instrument (Tampubolon, 2004).

2.3.4 Planned Behavior Theory

One of the theories for predicting behavior is the Theory of Planned Behaviour by Ajzen (1988). This theory is an extension and modification of the theory of reasoned behavior, where the theory of planned

behavior the beliefs have an effect on attitudes towards certain behaviors, on subjective norms, and on the counter-behaviors that are lived. These three components interact and become determinants of intentions which in turn will determine whether the behavior in question will be carried out or not. Sok (2020) adopts the theory of planned behavior and develops the variables in it based on empirical conditions.

2.3.5 Social Capital Theory

Currently, empowerment is not only aimed at a person but also at institutions in the community. Empowerment that prioritizes community customs and culture tends to be more effective than empowerment with new concepts that are not necessarily in accordance with the culture of the population (Suparjan et al, 2003).

Empowerment that is more effective and acceptable to the community is empowerment that prioritizes customs and culture compared to other elements that are not necessarily in accordance with the habits of the surrounding community (Suparjan, 2003).

2.3.6 Farmer Perception

The activities carried out by farmers in farming, in essence, are an effort to combine the potential (human) resources of farmers with production sources that can be controlled by Mardikunto (2007: 352). Perception is an aspect that 8 connects a person to work

3. METHODS

3.1 Research Location Determination Method

The determination of the location of this research was carried out deliberately (purposive), namely in Serdang Bedagai Regency. With several considerations that the area has the largest number of organic rice farmers and has inorganic rice farmers.

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3.3 Data Analysis Methods

To analyze the identification of problem 1: The value of the coefficient of variation can be used to calculate the risks of organic and inorganic rice farming. The ratio of risk to expected revenue or output with the amount of capital invested in the manufacturing process is known as the coefficient of variation (CV).

The analysis technique uses the following coefficients of variation:

$$CV = \frac{s}{x}$$

Information:

CV = Coefficient of variation in the income of organic rice farmers σ = Standard deviation of organic rice farmers' receipts

X = Average income of organic rice farmers

Analyzing Problem Identification 2 This study is to farmers' understanding of risks and their perception of the risks of organic and inorganic rice farming in Serdang Bedagai Regency. To achieve this goal, the researcher assigns questions to respondents and assigns a score for each given answer.

To identify the 3rd problem in facing the risks of rice farming using descriptive analysis. This analysis describes the strategies carried out by rice farmers in dealing with the risks of their farming

4. RESULTS AND DISCUSSION

4.1 Characteristics Responden

Characteristics Respond deep research Ini Is age level education, land area, land ownership status and length of farming.

4.1.1 Age

The age characteristics of organic rice farmers are mostly found at the age of 53-59 years, namely as many as 20 people with a percentage of 95% and 60-70 years old as many as 19 people with a total percentage of 5%. The age characteristics of organic farmers can be seen in the following table 3.

Table 3. Age of Organic Rice Farmer Respondents

NO	Age	Sum	Percentage
1	53-59	20	95

2	60-70	19	5
Total		**39**	**100**

Source: Primary Data 2024

The age characteristics of inorganic rice farmers in the research area are seen in table 4.

Table 4. Age of Inorganic Rice Farmers Respondents

NO	Age	Sum	Percentage
1	43-59	38	71
2	60-66	15	29
Total		**53**	**100**

Source: Primary Data 2024

In table 4, it can be seen that the age of the respondents of the most organic rice farmers is at the age of 43-59, namely 38 people with a percentage of 71%, then for the age of 60-66 there are 15 people with a percentage of 29%.

4.1.2 Education Level

Education is the spearhead of a person's future for his or her survival. The respondents of organic rice farmers have education levels ranging from elementary to high school/vocational. The education of organic rice farmer respondents can be seen in the following table 5.

Table 5. Education Level of Organic Rice Farmer Respondents

No	Education	Sum	Persntase
1	SD	20	52
2	SMP	12	31
3	SMA	7	17
Total		**39**	**100**

Source: Primary Data 2024

In table 5, it can be seen that the number of elementary school education for organic rice farmers is 20 people (52%), for junior high school education as many as 12 people (31%) and high school education as many as 7 people (17%).

For the level of education taken by inorganic rice farmers, it can be seen in the following table 6.

Table 6. Education Level of Inorganic Rice Farmer Respondents

No	Education	Sum	Persntase
1	SD	27	51
2	SMP	20	39
3	SMA	3	5
4	SMK	3	5
Total		**53**	**100**

Source: Primary Data 2024

It can be seen in the table of 10 levels of education of inorganic rice farmers at the elementary level as many as 27 people with a percentage of 51%, junior high school as many as 20 people with a percentage of 39%, high school level as many as 3 people with a percentage of 5% and for the vocational level as many as # people with a percentage of 5%.

4.1.3 Farming Experience

The length of farming will gain its own experience for farmers to be able to do better in their farming. The following is a table of the length of organic rice farming of respondents.

Table 7. Long Time Farming Organic Rice

No	Farm Length (Year)	Sum	Percentage

1	4-5	28	72
2	7-8	10	26
3	30	1	2
Total		**39**	**100**

Source: Primary Data 2024

In table 7, it can be seen that the length of organic rice farming respondents varies, ranging from 4 – 5 years with a total of 4 people and a percentage of 72%, for 7-8 years as many as 15 people with a percentage of 25% and the duration of 30 years of farming as much as 1 person with a percentage of 2%.

Table 8. Long time of inorganic rice farming

No	Farm Length (Year)	Sum	Percentage
1	6-16	22	42
2	17-25	20	38
3	27-35	11	20
Total		**53**	**100**

Source: Primary Data 2024

In table 8, it can be seen that the length of organic rice farming respondents varies, ranging from 6-16 years with a total of 4 people and a percentage of 42%, for 17-25 years as many as 15 people with a percentage of 38% and the length of farming for 27-35 years as much as 1 person with a percentage of 20%.

4.1.4 Land

Land area is one of the factors that can affect the production of organic and inorganic rice farming. Land area can also have an impact on farmers how to manage farming to be more productive. The area of organic rice land can be seen in the following table 9.

Table 9. Organic Rice Land Area

No	Land Area (Ha)	Sum	Persntase %
1	0,16	15	38
2	0,2	16	41
3	0,24	1	3
4	0,28	6	15
5	0,48	1	3
Total		**39**	**100**

Source: Primary Data 2024

In table 9, it can be seen that the land area of 0.16 Ha is owned by 15 people with a percentage of 38%, for the land area of 0.2 Ha owned by 16 people with a percentage of 41% and the land area of 0.24 Ha is owned by 1 person with a percentage of 3%, for the land area of 0.28 Ha owned by 6 people (15%) and 0.48 Ha owned by 1 person with a percentage of 3%.

Table 10. Inorganic Rice Land Area

No	Land Area (Ha)	Sum	Persntase %
1	0,16	10	19
2	0,2	20	38
3	0,24	11	20
4	0,28	9	17
5	0,32	2	4
6	0,36	1	2
Total		**39**	**100**

Source: Primary Data 2024

The area of inorganic rice land owned by farmers is very diverse, for a land area of 0.16 Ha owned by 10 farmers with a percentage of 19%, for a land area of 0.2 Ha owned by 20 farmers with a percentage of 38%, a land area of 0.24 owned by 11

farmers with a percentage of 20%, a land area of 0.28 hectares owned by 9 farmers (17%), a land area of 0.32 hectares owned by 2 farmers (4%) and a land area of 0.36 owned by 1 farmer with a percentage of 2%.

4.2 Analysis of Farming Risk Levels

4.2.1 Organic Rice

Risk is something faced by farmers in farming, but it can still be controlled. Hanvood (1999) explained several risks that often occur.

Table 11. Analysis of the Risk Level of Organic Rice Farming

No	Risk	CV Value	Category
1	Production	0,3	Low
2	Cost	0,06	Low
3	Income	0,38	Low

Source: Primary Data Analysis 2024.

In table 11 the CV value for production risk is 0.24 in the low category, the CV value for cost risk is 0.06 in the low category, and the CV value for income risk is 0.38 in the low category.

4.2.2 Inorganic Rice

The risk level of inorganic rice farming can be seen in the following table 12

Table 12. Analysis of the Risk Level of Inorganic Rice Farming

No	Risk	CV Value	Category
1	Production	0,24	Low
2	Cost	0,10	Low
3	Income	0,36	Low

Source: Primary Data Analysis 2024

Judging from table 16, the CV production risk value is 0.24, CV cost risk is 0.10, and CV income risk is 0.36 and is included in the low category.

4.4. Farmers' Perception of Farming Risks

Table 13 shows how much farmers perceive the risks of organic rice farming. There are three indicators to determine farmers' perception of production, market, and financial risks, which are divided into three classes: Good, Neutral, and Poor.

4.4.1 Farmers' perception of organic rice risks

Risk is an objective thing assuming sufficient information is available. Uncertainty is an event where the outcome and the odds cannot be determined. Furthermore, it was stated that uncertainty is a description of the character and economic environment faced by farmers, where the environment contains various uncertainties that farmers respond to.

Table 13. Farmers' perception of production risks

No	**Information**	**Frequency (N=39)**	**Percentage %**
1	In the event of a drought, the production received by farmers does not decrease in large amounts.		
	a. Yield drop of more than 50% from previous results		
	b. 20-50% decrease in yield from previous production	10	25
	c. Yield decline of less than 20% from previous production	29	75
2	Plant Pest Organisms (OPT) that attack organic rice plants, do not reduce production in large quantities.		
	a. The production result is approximately 50% of the previous production result		
	b. Reduced production between 20-50% of previous production	12	31

c. Production output that is approximately 50% of the previous production	27	69
3. The shift in seasons does not result in the organic rice planting season becoming erratic		
a. Season planting becomes erratic.		
b. There is a possibility that the growing season changes	9	23
c. The planting season occurs as before	30	77
4. Irrigation which is quite difficult in the dry season is not thwarting farmers' efforts in organic rice farming		
a. Not doing organic rice farming during the dry season		
b. There is a possibility of not doing organic rice farming.	9	23
c. Continue to carry out organic rice farming	30	77
5. In one stretch of rice fields, not all are planted organically, so there is a possibility of being contaminated with pesticides from the surrounding rice fields. This does not make it difficult for farmers in his organic rice farming.		
a. No longer want to do organic rice farming		
b. Starting to be not interested in organic rice farming		
c. Still willing to carry out organic rice farming	30	100

Based on the results of table 13 above, if there is a drought in the production received by farmers who do not experience a large decrease, the decrease in yield is less than 20% with the highest percentage of 75%. When OPT disrupts organic crops, productivity decreases by less than 50% with a percentage of respondents of 69%. At the time of the seasonal shift, it did not change the planting season at all because farmers continued to follow the planting season that had occurred before with the percentage of respondents 77%. In one stretch of rice field, not one of these beds is organic plants, so there is a possibility of being contaminated with inorganic but this is not a barrier for organic farmers, because they still choose to be willing to carry out organic rice farming with a percentage of 100%.

Table 14. Farmers' perception of the market

No	Information	Frequency (N=39)	Percentage %
1	The selling price of rice received by farmers is lower than The price received by traders, farmers do not feel a loss and are still willing to do organic rice farming		
	a. Feeling at a loss and not willing to do organic rice farming anymore		
	b. Feeling at a loss, but still willing to do organic rice farming	16	42
	c. Do not feel a loss and are still willing to do organic rice farming	23	58
2	Limited organic rice consumers (only certain amounts) do not make farmers stop Organic rice farming.		
	a. Stop		
	b. There is a possibility of stopping	10	25
	c. Not stopping, because so far the existing organic rice is still selling	29	75
3.	The price of organic rice that is not protected at the lowest price at harvest time is not a threat to farmers.		
	a. Becoming a Threat		
	b. There is a possibility of becoming a threat	8	20

c. Not a threat, because the price received by farmers can already reimburse the production cost	31	80

From table 14, it can be seen that the selling price of rice received by farmers is lower than the price received by traders, but some farmers make a loss and are still willing to do organic rice farming with a percentage of 42%, there are also some farmers who do not feel a loss and they are still willing to do organic rice farming with a percentage of 58%.

For limited organic rice consumers, making their perception there is a possibility to stop by 25%, but other perceptions will not stop as long as there are still consumers, they will continue to farm organic rice with a percentage of 75%.

For the price of unprotected organic rice, some farmers consider the possibility of becoming a threat of 20%, and some Considering that it is not a threat because the price received by farmers can cover the cost of production with a percentage of 80%.

Table 15. Farmers' perception of cost risk

No	Information	Frequency (N=39)	Percentage %
1	If there is a shortage of capital to farm organic rice, it does not make farmers reluctant to farm organic rice.		
	a. Reluctant to do organic rice farming and unwilling to borrow for capital		
	b. Still farming organic rice and willing to borrow for capital, but the area of land planted is less	16	42
	c. Organic rice farming and willing to borrow for capital, without reducing the area of land planted	23	58
2	Expenditure to meet the needs of farmers' households is high, not making farmers reluctant to farm Organic rice.		
	a. Not doing organic rice farming		
	b. Conducting organic rice farming by reducing the area of land planted	10	25
	c. Conducting organic rice farming without reducing the area of land planted	29	75
3.	There are no financial institutions that provide capital, making it difficult for farmers to obtain additional capital.		
	a. Quite difficult	8	20
	b. It is not difficult, because it can be borrowed from farmer groups or to close relatives	31	80

Table 15 When farmers lack capital, it does not make them stop doing business, because they will borrow capital with less land area to be planted, this perception is 42% and there are some who continue to borrow capital but do not reduce the area of land planted by a percentage of 58%.

If the expenditure on household needs is high enough, then 25% of farmers do business by increasing the area of land they plant, but there are 75% of farmers who continue to farm without reducing their land area. At the time of lack of capital, there is no institution that oversees capital so that 20% of farmers think it is quite difficult and 80% of farmers think it is not difficult because they can borrow from farmer groups or their closest relatives.

4.4.2 Farmers' perception of the risk of inorganic rice

Table 16. Farmers' perception of the risk of inorganic rice

No	Information	Frequency (N=39)	Percentage %
1	In the event of a drought, the production products received farmers did not experience a large decrease.		
	a. Yield drop of more than 50% from previous results		
	b. 20-50% decrease in yield from previous production	20	37
	c. Decrease in yield of less than 20% of previous production	33	63
2	Plant Disrupting Organisms (OPT) that attack organic rice plants, do not reduce yields production in large quantities.		
	c. Production results that are approximately 50% of the previous production results produced		
	d. Production output that is reduced between 20-50% of the previous production	41	77
	c. Production output that is less than 20% of the previous production	12	23
3.	Seasonal shifts do not result in the growing season Organic rice becomes erratic		
	a. The growing season becomes erratic.		
	b. There is a possibility that the growing season changes	31	58
	c. The planting season occurs as before	22	42
4.	Irrigation which is quite difficult in the dry season is not thwarting farmers' efforts in carrying out inorganic rice farming		
	a. Not doing inorganic rice farming when dry season		
	b. There is a possibility of not doing rice farming anorganik.	5	10
	c. Continue to carry out inorganic rice farming	48	90
5.	Deep one Rice paddy fields, not all are planted inorganically, so there is a possibility that contamination from the surrounding rice fields. It is not making it difficult for farmers to cultivate their inorganic rice.		
	a. No longer want to do inorganic rice farming		
	b. Starting to be not interested in inorganic rice farming		
	c. Still willing to carry out inorganic rice farming	53	100

The decline in inorganic rice production due to drought reached 27% with a decrease of 20-50%, and 87% with a decrease of less than 20%. OPT attacks cause a 77% decrease in production with a 20-50% decline and 22% with a decrease of less than 20%.

As many as 58% of farmers are likely to change planting seasons, while 42% continue to follow the regular planting season. Irrigation limitations do not hinder farming, with 90% of farmers continuing to farm and 10% likely to stop. In the expanse of rice fields, not all expanses are planted inorganic, but they will continue to plant inorganic rice farming with a percentage of 100%.

Table 17. Farmers' perception of the market

No	Information	Frequency (N=39)	Percentage %

1	The selling price of rice received by farmers is lower than The price received by traders, farmers do not feel a loss and are still willing to do inorganic rice farming		
	d. Feeling at a loss and not willing to do inorganic rice farming anymore		
	e. Feeling at a loss, but still willing to do inorganic rice farming	32	60
	f. Do not feel a loss and are still willing to do inorganic rice farming	21	40
2	Unlimited inorganic rice consumers do not make farmers stop Organic rice farming.		
	d. Stop		
	e. There is a possibility of stopping	22	41
	f. It does not stop, because so far the existing organic rice is still selling	31	59
3.	The price of inorganic rice that is not protected at the lowest price during harvest is not a threat to farmers.		
	a. Becoming a Threat		
	b. There is a possibility of becoming a threat	26	49
	c. Not a threat, because the price received by farmers can already reimburse their production costs	27	51

The selling price of rice received by farmers, there are around 60% who say that it is a loss but are still willing to do their business and there are 40% who do not feel a loss. Unlimited consumers of inorganic rice are likely to make farmers quit with a percentage of 41% and there are 59% of farmers who will not stop and continue their farming.

Table 18. Farmers' perception of finance

No	Information	Frequency (N=39)	Percentage %
1	If there is a shortage of capital to farm inorganic rice, it does not make farmers reluctant to farm organic rice.		
	a. Reluctant to do inorganic rice farming and unwilling to borrow for capital		
	b. They continue to farm inorganic rice and want to borrow for capital, but the area of land planted is less	31	58
	c. Farming inorganic rice and willing to borrow for capital, without reducing the area of land planted	22	42
2	Expenses to meet household needs Farmers are tall, it does not make farmers reluctant to cultivate organic rice.		
	a. Not doing inorganic rice farming		
	b. Conducting organic rice farming by reducing the area of land planted	29	54
	c. Conduct Farming rice an organik without reducing the area of land planted	24	46
3.	There are no financial institutions that provide capital, making it difficult for farmers to obtain additional capital.		
	a. Making it difficult for farmers		
	b. Quite difficult	7	13
	c. It is not difficult, because it can be borrowed from farmer groups or to close relatives	46	87

When farmers lack capital, it does not make them stop farming, because they will borrow capital with less land area to be planted, this perception is 58% and there are some who still borrow capital but do not reduce the area of land planted by a percentage of 42%.

If the expenditure on household needs is high enough, then 54% of farmers do business by increasing the area of land they plant, but there are 46% of farmers who continue to farm without reducing the area of their land. At the time of lack of capital, there is no institution that oversees capital so that 13% farmer Assumeenough Complicate and 87% Farmers think it is not difficult because they can borrow from farmer groups and their closest relatives.

4.5 Risk Management of Organic Rice Farming in Serdang Bedagai Regency

The characteristic of agricultural products is that they cannot avoid risks and uncertainties. Various efforts have been made by farmers or agribusiness actors in minimizing risks and reducing the impact on the sustainability of farming.

Risk management in organic rice farming is a way that must be done by farmers in carrying out their farming activities to minimize the risks that will be accepted. Various risks that exist in organic rice farming will threaten the income obtained by farmers, so agricultural risk management needs to be carried out.

The management strategies carried out by the farmers can be grouped into 3 groups, namely:

a. Ex-ante risk management strategies

This strategy is carried out by farmers before the risk occurs, this business is designed by farmers to prepare farmers so that they are not in a vulnerable position when a risk occurs.

b. Risk management interactive strategy

This strategy is carried out by farmers at times of risk involving resource realallocation so that the impact of risks on production can be minimized.

c. Ex-post management strategy

This strategy can be carried out by farmers after a risk occurs, where this strategy is more directed to minimize the impact of risks in the future.

4.5.1 Organic Rice Management Strategy

1. Ex-ante risk

Table 19. Management of Ex-ante Strategy for Organic Rice Farming

No	Description	Answer	Percentage
1	The dominant planting pattern in one year carried out		
	What. Padi-Padi-Ten		
	b. Padi-Padi-Palavija	29	74
	c. Padi-Padi-Palavija-Ten	10	26
2	Rice planting system used		
	a. Lego 4:1	39	100
	b. SRI planting system		
3	Rice varieties used in one growing season		
	a. The rice varieties used in all organic fields are 1 variety	39	100
	b. More than 1 rice variety used on the same land		
4	Source of cultivated seeds/seeds		
	a. Self-produced	39	100
	b. Group production results TNI/Neighbors/Relatives		
	c. Buying from a stall/saprodi store		
5	What types of varieties are used		
	a. Hawang	39	100
	b. Milking		

c. Pandan wangi

Based on table 23 above, some respondents use the paddy-paddy-palawija planting pattern (74%) in addition to the planting pattern, farmers also use the paddy-paddy-palawija-paddy planting pattern (26%) The reason why farmers use the paddy-paddy-palawija planting pattern is in accordance with the climate and the risk level is also low, and the reason why farmers use the paddy-paddy-palawija-paddy pattern is more profitable. The rice planting system used by the respondents is legowo 4:1 because it makes the rice more adequately exposed to sunlight and when farmers do maintenance, it is also easier. For varieties They planted the same 1 variety (100%) because the taste of rice from Hawang is quite fluffy. The source of seeds they get is their own production that has been sorted so that it is not contaminated with other varieties. The type of variety used is the hawang variety (100%) because this variety has long grains and a fluffier rice taste.

2. Strategi Interactive

Table 20. Management Strategy Interctive Strategy

No	Description	Total Respond on	Percentage %
1	If some of the plants in the field die, then:		
	a. Embroidery is carried out	39	100
	b. No embroidery		
2	Planting distance used		
	a. Close planting distance (25 x 30 cm)	39	100
	b. Spacing is sparse / wide (more than 30x 30 cm)		
3	The amount and type of fertilizer used in the growing season:		
	a. No difference in type and volume		
	b. Not different types, but different volumes	35	90
	c. Different types and volumes	4	10
4	Actions taken when experiencing a shortage of Labor (TK)		
	a. Making the most of the workforce in the family		
	b. Utilizing the existing workforce in rotation	18	46
	c. Looking for wage workers from outside the village	21	54
	d. Using mechanical/mechanical labor		
5	Actions taken if there is a shortage or cost difficulties in organic rice farming production activities		
	a. Borrowing from formal credit (banks/cooperatives)		
	b. Borrowing from informal credit (borrowing from neighbors/relatives)	14	36
	c. Borrowing from farmer groups		
	d. Lending to agents	25	64

In table 20, it can be seen that organic rice farmers when the plants die after the planting is completed, they (100%) do embroidery because to cover the dead plants in some corners of the land, dead plants can be caused by high rainfall and so on. The planting distance used by all respondents was 25 x 30 cm because this distance is a good planting distance. During the planting season, farmers also provide fertilizer, 90% of farmers use the same type of fertilizer but with different volumes and 10% of farmers use different types of fertilizers and volumes. During the simultaneous planting season, labor is very difficult to get, so 46% of respondents wait to change the existing workforce and 54% of respondents prefer to look for workers from outside the village. The

delay that is carried out if experiencing shortages or cost difficulties in agricultural production activities is that 36% of respondents choose to borrow informal credit and 64% prefer to borrow from agents.

3. Strategi Ex-post

Table 21. Management Strategy Interctive Strategy

No	Description	Total Responden	Percentage %
1	The status of rice farming in supporting his family		
	a. Completely dependent on organic rice farming	33	85
	b. Not dependent on organic rice farming		
	c. Dependence on other farming	6	15
2	If rice farming fails, efforts to cover up failures in supporting families		
	a. Income from other farming (chili, eggplant, and others)	6	15
	b. Taking from savings	33	85
	c. Borrowing from other farmers/neighbors/relatives		
	d. Relying on additional work (project work, working in a rice mill, trading, etc.)		
	e. Selling a portion of the assets owned (electronics / plot of land)		
3	If there is a loss, what action or which source of capital is chosen for the next rice farming		
	a. Broad plant at season plant Next is adjusted to the existing capital		
	b. Increase capital by taking from savings		
	c. Increase capital by borrowing money from Agents	39	100
4	Actions taken if rice farming is considered to have failed		
	a. Finding solutions to existing problems, for example by asking farmers who understand better	39	100
	b. Switching from organic rice farming to farming such as chili, corn, etc		

There were 85% of respondents who were completely dependent on their own organic rice farming and 15% of farmers were dependent on other farming. If the farmer fails to meet the needs of the family, they cover the needs from other farming income by 15% and take from savings by 85%. If the farming suffers losses so that the source of capital used for the next planting period is borrowing with an agent (100%). If this farming fails, the action they take is to find a solution to the crop failure (100%).

4.5.2 Inorganic Rice Management Strategy

1. Ex-ante Strategists

Table 22. Ex-ante Management Strategy

No	Description	Total Responden	Percentage %
1	The dominant planting pattern in one year carried out What. Padi-Padi-Ten		
	b. Padi-Padi-Palavija	28	52
	c. Padi-Padi-Palavija-Ten	25	48
2	Rice planting system used		

	a. Lego 4:1	53	100
	b. SRI planting system		
3	Rice varieties used in one growing season		
	a. The rice varieties used in all inorganic lands are 1 variety	53	100
	b. More than 1 rice variety used on the same land		
4	Source of cultivated seeds/seeds		
	a. Self-produced	53	100
	b. The product of the tni/neighbor/relative group		
5	c. Buying from a stall/saprodi store		
	What types of varieties are used		
	a. Hawang	53	100
	b. Milking		
	c. Pandan wangi		

Some respondents use the paddy-paddy-palawija planting pattern (52%) in addition to the planting pattern, farmers also use the paddy-paddy-palawija-paddy planting pattern (48%) The reason farmers use the paddy-paddy-palawija planting pattern is in accordance with the climate and the risk level is also low, and the reason farmers use the paddy-paddy-paddy-paddy pattern is more profitable. The rice planting system used by the respondents is legowo 4:1 because Making rice more adequately exposed to Atahari rays and when farmers do maintenance, it is also easier. For the varieties they planted, they use 1 of the same variety (100%) because the taste of rice from hawang is quite fluffy. The source of seeds they get is their own production that has been sorted so that it is not contaminated with other varieties. The type of variety used is the hawang variety (100%) because this variety has long grains and a fluffier rice taste.

2. Strategi Interactive

Table 23. Interactive Management Strategy

No	Description	Total Responden	Percentage %
1	If some of the plants in the field die, then:		
	a. Embroidery is carried out	53	100
	b. No embroidery		
2	Planting distance used		
	a. Close planting distance (25 x 30 cm)	53	100
	b. Spacing is sparse / wide (more than 30x 30 cm)		
3	The amount and type of fertilizer used in the growing season:		
	a. No difference in type and volume		
	b. Not different types, but different volumes	35	90
	c. Different types and volumes	4	10
4	Actions taken when experiencing a shortage of Labor (TK)		
	a. Making the most of the workforce in the family		
	b. Utilizing the existing workforce in rotation	33	62
	c. Looking for wage workers from outside the village	20	38
	d. Using mechanical/mechanical labor		
5	Actions taken if there is a shortage or cost difficulties in organic rice farming production activities		
	a. Borrowing from formal credit (banks/cooperatives)		

b. Borrowing from informal credit (borrowing from neighbors/relatives)		
c. Borrowing from farmer groups	30	56
d. Borrowing from agents	23	44

After the planting period ends and there are dead plants, inorganic rice farmers do full embroidery to cover the dead plants in some corners of the land, perhaps due to high rainfall or other factors. All respondents (100%) used the ideal planting distance of 25 x 30 cm to increase production yields. In terms of fertilization, 90% of farmers use the same type of fertilizer with different volumes, while 10% use different types and volumes of fertilizers. This shows farmers' awareness of the importance of good and efficient crop management. During the growing season, organic rice farmers face difficulties in obtaining labor. As a solution, 62% of farmers are waiting for their turn to work and 58% are looking for workers from outside the village. To overcome the difficulty of production costs, 56% of farmers choose informal credit and 44% choose to borrow from agents.

2. Strategi Ex-post

Table 24. Ex-post Management Strategy

No	Description	Total Respond	Percentage %
1	Status Farming rice deep supporting his family		
	a. Fully dependent on inorganic rice farming	30	56
	b. Not dependent on organic rice farming		
	c. Dependence on other farming	23	44
2	If rice farming fails, efforts to cover up failures in supporting families		
	a. Income from other farming (chili, eggplant, etc.)	23	44
	b. Taking from savings	30	56
	c. Borrowing from other farmers/neighbors/relatives		
	d. Relying on additional work (work projects, working in rice mills, trading, etc.)		
	e. Selling a portion of the assets owned (electronics / plot of land)		
3	If there is a loss, what action or which source of capital is chosen for the next rice farming		
	a. The planting area in the next planting season is adjusted to the existing capital		
	b. Increase capital by taking from savings		
	c. Increase capital by borrowing money from Agents	53	100
4	Actions taken if rice farming is considered to have failed		
	a. Finding solutions to existing problems, for example by asking farmers who understand better	53	100
	b. Switching from organic rice farming to farming such as chili, corn, etc.		

The majority of organic rice farmers (56%) depend entirely on the farming to meet their livelihoods, while 44% have other sources of income. If farming fails to meet the needs of families, then 44% of farmers rely on other farming income and 56% use personal savings to cover the shortfall. If organic rice farming suffers losses, all farmers (100%) rely

on loans from agents for the next planting capital. If losses continue, all farmers will also look for strategic solutions to overcome the crop failure, showing a strong commitment to facing the challenges and restoring farming.

5. CONCLUSIONS

1) The most common risks faced by organic and inorganic rice farmers are crop pest organism (OPT), uncertain weather/climate, limited organic consumers, members of farmer groups do not want to plant organic rice, farmers' enthusiasm in organic rice farming is reduced, farmers' health is disturbed, labor is reduced, farmer behavior is less than optimal in organic rice farming, different labor capabilities, small farming capital, and high expenditure to meet the needs of farmer households. The risk level of organic rice farming is production risk (0.3), cost risk (0.06) and income risk (0.38) and can be categorized as low risk level. For inorganic rice farming, production risk (0.24), cost risk (0.10) and income risk (0.36) are categorized as low.
2) Farmers' perception of organic rice farming tends to be positive, showing resilience and confidence in facing various challenges.
3) Farmers' perception of risks Risk management carried out by organic and inorganic rice farmers starts from farmers identifying damage or problems that occur in organic rice farming, then looking for the cause of the damage. Farmer also do several ways to reduce the risks that occur in their farming. There are three strategies carried out by farmers, namely ex-ante (before the risk occurs), interactive (when the risk occurs), and ex-post (after the risk occurs) strategies.

SUGGESTION

1) Farmers to reduce production risks should take advantage of the rice field ecosystem to reduce the existing OPT.
2) Organic rice producers should expand their marketing by adding partners for organic rice sales. This is done to reduce the income risk that occurs in organic rice farming.

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