

JOURNAL OF THE NUSANTARA AGRICULTURE SCIENCE

VOLUME 1, NOMOR 1, NOVEMBER 2023

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Volume 1, Nomor 1 ,November 2023

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The nusantara agriculture science

Volume 1, Nomor 1 ,November 2023

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The Perception of Contract Farming on The Sustainable Production of Potato in Indonesia

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Abstract

Farmers' perceptions of farming contracts are very decisive in making farming decisions. There are still many farmers who refuse to participate in farming contracts because of the lack of information, payment processes and the absence of price guarantees. It is important to study the perception of farmer partnerships to support sustainable production. The basic method used is descriptive analysis research. This type of research is a survey with an explanatory analysis study method. From the results of the study, it can be concluded that the perceptions that are categorized very well are the ease of registration; Meanwhile, perceptions that are categorized as good are information on partnerships, membership contracts, no payments to become members, partnerships are fair and profitable, market certainty, prices are high and stable, there is guidance that helps farmers, and the marketing process through partnerships is easier. Perceptions that fall into the neutral category are price comparisons between participating in partnerships with far different markets and borrowing business capital. Meanwhile, a very bad perception is the freedom to market agricultural products.

Keywords

Perception, Contract Farming, Potato, Sustainable Production

1 Introduction

The high population growth in Indonesia has an impact on increasing food needs, especially horticultural commodities. The need for horticulture increases every year but is not matched by adequate production. One of the horticultural commodities that have production development opportunities is potato. Potatoes account for 7.6 percent of the total Gross Domestic Product of vegetables or 2.6 percent of the GDP of Horticulture (Rachmat, 2006).

One of the most popular horticultural products is potato. The increase in people's welfare and changes in people's food consumption preferences make the need for potatoes increases every year. In addition, the increase in demand for potatoes is also caused

by the proliferation of fast food restaurants, which generally provide French fries and snacks such as potato chips. Table 1 shows that the number of potato commodities from 2017 to 2020 has increased on average. Even in 2019, the total production of potatoes was 1.3 million tons and one of the highest productions for other horticultural commodities. Potato commodity prices are also relatively high so that they have good domestic trade value and export potential. The high price of potatoes occurs because of the value of using potatoes which can be processed into various forms of processed food products such as staple foods, chips, and as safe substitute food ingredients (Cahyadi, 2020).

Table 1. Data on Total Potato Exports for 2018-2020

Year	Export Volume (Ton)			Export Value (juta US\$)
	Processed	Fresh	Total	
2018	1,337	3,823	5,160	4.65
2019	1,607	3,248	4,855	6.05
2020	4,449	4,357	8,806	8.11

Source : Data BPS, 2022

Table 1 shows where the value of potato exports from 2018 to 2020 continues to increase. Even in 2020, it experienced a very high increase of more than 80% from the previous year. This shows that export demand for potato commodities is very good so that the business development opportunities are very potential. Potato production in Indonesia is only dominated by 2 well-known potato varieties, namely the Cipanas variety and the Granola variety. This is because only this variety is able to grow and produce optimally in the climate and soil conditions in Indonesia. Meanwhile, other varieties such as the Atlantis variety are only able to grow but are not able to produce optimally in the climate and soil conditions in Indonesia. In Indonesia, potato production centers are located in the provinces of West Java, Central Java, East Java and North Sulawesi.

One of the centers of potato production in Central Java is Purbalingga Regency, especially Karangreja District. In 2020 Karangreja sub-district produced 73,630 quintals of potatoes and was the highest in Purbalingga Regency (Statistik, 2020)(BPS data, 2022). Potato commodity is very suitable to grow in this sub-district because Karangreja District is a sub-district in Purbalingga Regency which is located in a highland area around the foot of Mount Slamet, with an altitude of 650-1,500 meters above sea level, with an average temperature of 20°C and good rainfall. Land conditions and topography like that are very supportive, making potato plants very potential to be developed. (Abhar et al., 2018). Although climatic and soil conditions are very suitable for potato plant growth, the harvested area and potato production are still low, occupying the 6th position in Central Java Province (table 2).

Table 2. Harvest Area and Production of Potatoes 2020 Central Java Province

District	Harvest Area	Production Quantity
District Banjarnegara	6,347	1,149,576
District Wonosobo	3,461	533,722
District Brebes	2,528	505,786
District Batang	2,350	357,470
District Pekalongan	697	124,955
District Purbalingga	370	73,630

Source : Data BPS, 2022

Management of potato farming is mostly through contract farming in the form of partnerships with companies. Agribusiness partnerships can be used as a strategy that can be a solution to the problems faced by potato farmers in Karangreja District. The existence of partnerships can improve product integration, increase integration between actors, increase efficiency in the entire supply chain, avoid double margins, create added value for products, can respond to consumer desires more quickly and produce products with high

quality and more competitive prices. A partnership process aims toward mutual relationships that are characterized by willingness and ability to share sources of power such as ideas, information, decision-making processes, tasks, skills, and accountability. For these to be shared, partners must establish operative norms and define each other's rights and obligations (Buchanan, 1994; Calder, 1995). This is in line with Saptana and Daryanto (2013) which states that partnership is a supply chain starting from the process of production,

processing and distribution as well as marketing to consumption. In the field case, potato farmers in Karangreja use two distribution channels, namely distribution with large collectors and distribution with partnerships. One company that cooperates with farmers in Karangreja District is PT. Indofood Fritoly Makmur since 2020. According to Zacharia et al. (2009) stated that increasing partnerships in the supply chain requires interdependence and insight into partners.

Studies of partnership point to the danger of such practices, as well as to the disparities between expectations and actual implementation of partnership (Barak and Sadan, 2003; Cooke and Kothari, 2001; Schmid, 2001; Shemer, 2003). Farmers' perceptions of farming contracts are very decisive in making farming decisions. There are still many farmers who refuse to participate in farming contracts because of the lack of information, payment processes and the absence of price guarantees. This study aims to determine farmers' perceptions of contract farming on the sustainable production of potato

2 Methods

The method is used based on descriptive analysis research (Nazir, 1998). This type of research is a survey with an explanatory analysis study method. The research was conducted in Purbalingga Regency with the determination of the research location carried out purposively, namely Karangreja District which is the center for potato farming of Atlantic varieties. Determination of research sample using purposive technique. Farmers' perceptions of partnerships were analyzed using a scoring system, namely giving a score to the question items that stated the farmers' perceptions of the partnership. The scoring uses a Likert scale. Then the variable indicators are used as instruments to make statements (Turangan et al, 2017). Measurement of perception in this study used a Likert scale score of 1-5. The weights of the Likert scale used in this study are presented in Table 3.

Table 3. Statement Score

Scale Jawaban	Nilai/Skor
Strongly Disagree	1
Don't agree	2
Neutral	3
Agree	4
Strongly agree	5

The average score and score interval are calculated in the following way:

$$Average\ Score = \frac{Score\ Total}{Total\ Respondent}$$

Durianto et al (2013)

Description:

n1 x 1 = the number of respondents who stated STS x scale likert

n2 x 2 = the number of respondents who stated TS x scale likert

n3 x 3 = the number of respondents who stated N x scale likert

n4 x 4 = the number of respondents who stated S x scale likert

n5 x 5 = the number of respondents who stated SS x scale likert

Based on the calculation of the average score, the category of perception assessment based

on the score interval used in this study is as follows:

$$Interval\ Skor = \frac{score\ max\ skala\ likert - score\ min\ skala\ likert}{number\ of\ intervals\ used}$$

$$Interval\ Skor = \frac{5 - 1}{5} = 0,8$$

Description :

Very not good = 0.80 – 1.69

Not good = 1.70 – 2.59

Neutral = 2.60 – 3.49

Good = 3.50 – 4.29

Very good = 4.30 – 5.00

3 Results and Discussion

Farmer characteristics are the characteristics of potato farmers who are respondents in this study. The number of farmers used in this study were 35 potato farmers in Karangreja District who established partnerships. Characteristics of potato farmers include farmer's age, last education, farming experience, and area of land used for potato farming. The following are the characteristics of potato farmers in Karangreja District:

1. Age of farmer

According to BPS (2021), the age group (age) can be divided into two groups, namely the productive age group and the unproductive age group. Ages that can create effective work are 15 years old and less than 65 years old. If a farmer is 65 years old or older, the ability to work, especially in running a farm, is reduced. Farmers who are 14 years old are said to be unproductive because the growing phase occurs at this age and they are not yet effective at work. Based on this explanation, the age group of farmers in Karangreja District in this study can be seen in Table 4.

Table 4. Characteristics of Farmers by Age

No	Age of Farmer (Year)	Amount	Percentage (%)
1	<15	0	0
2	15-65	35	100
3	>65	0	0
Jumlah		35	100

Sumber : Data Primer diolah, 2022.

Table 4 shows that all potato farmers who are respondents in Karangreja District, Purbalingga Regency are included in the productive age group, namely 15-64 years old. There are 35 farmers or as many as 100% who are aged 15-64 years who are classified as productive age and there are no farmers who have unproductive age. This shows that potato

farmers still have good physical conditions, so that in carrying out farming they can still produce maximum energy to produce or get high production yields and can do good farming work, because workers who are of productive age tend to have high productivity. physically stronger and fitter compared to non-productive age workers.

2. Farmer's Education Level

According to Trahati (2015), education is an activity to achieve certain goals and objectives in life, which is carried out by humans consciously and programmed to build good and

strong characters and develop the capacities and talents that exist in every human being. The education level of potato farmers can be seen in Table 5.

Table 5. Characteristics of Farmers Based on Education Level.

No	Education Level	Amount	Percentage (%)
1	SD	21	60.00
2	SMP	11	31.43
3	SMA	3	8.57
Total		35	100.00

Source: Primary data processed, 2022.

Based on Table 2, it shows that the education level of potato farmers in Karangreja District, Purbalingga Regency is very diverse, starting from Elementary School (SD) to Senior High School. Elementary school education level (SD)

as many as 21 people or as much as 60%, junior high school education level (SMP) as many as 11 people or as much as 31.43%, high school education level (SMA) as many as 3 people or as much as 8.57% . Based on this, the

education level of potato farmers in Karangreja District, Purbalingga Regency is still relatively

low because more than 50% of potato farmers only have elementary school education level.

3. Farming Experience

Experience is a knowledge that a person gains in the learning process in order to be able to accept and do new things. If a farmer has a low level of education, but has long enough farming experience, it can help and maximize in running a farm and can increase farmers' income, if a farmer has long enough farming experience,

then the farmer will be better prepared to move forward to business development, and minimize risks that will occur because they can learn from previous experiences. According to Yunismar, et.al (2014), experience can be grouped into 3, namely group 1 low experience <5 years, group 2 moderate experience 5-10 years, and group 3 high experience >10 years. The experience of potato farmers can be seen in Table 6

Table 6. Characteristics of Farmers Based on Farming Experience

No	Farming Experience (Year)	Amount	Percentage (%)
1	<5	1	2.86
2	5-10	16	45.71
3	>10	18	51.43
	Total	35	100.00

Sumber : Data Primer diolah, 2022.

Based on Table 3, potato farmers in Karangreja District, Purbalingga Regency have farming experience of less than 5 years as many as 1 person or 2.86%, farming experience of 5-10 years as many as 16 people or 45.71%, and farming experience of more than 10 years as many as 18 people. or 51.43%. This proves that potato farmers in Karangreja Subdistrict, Purbalingga Regency have long experience in running a farm because more than 50% of farmers have more than 10 years of experience in potato farming.

4. Farmer's Land Area

Land area is one of the factors of production that is very influential on the yield or production of a plant. Large land is not a guarantee that it can provide high yields, but narrow land is also inefficient in land management. Therefore, optimal and best use of land will result in high production (Sinaga, 2015). The following is the area of land for potato farmers in carrying out farming which can be seen in Table 4.

Table 7. Characteristics of Farmers Based on Land Area

No	Land Area (ha)	Amount	Percentage (%)
1	0.10-0.25	22	62.86
2	0.26-0.41	6	17.14
3	0.42-0.57	6	17.14
4	0.58-0.73	0	0.00
5	0.74-0.89	0	0.00
6	0.90-1.00	1	2.86
	Total	35	100.00

Source: Primary data processed, 2022.

Based on Table 4 there are potato farmers who have a land area of 0.1-0.25 ha as many as 22 people or 62.86% belonging to a small arable land scale, there are potato farmers who have a land area of 0.26-0.41 ha as many as 6 people or 17.14% belonging to the low arable land

scale, there are potato farmers who have a land area of more than 0.42-0.57 ha as many as 6 people or 17.14% belonging to the land scale Medium cultivation, there are potato farmers who have a land area of more than 0.9-1 ha as many as 1 person or 2.86% which is classified

as a large arable land scale. Based on the explanation above, the average area of land used by potato farmers in Karangreja District in carrying out potato farming is classified as low-scale.

Analysis of farmers' perceptions of partnerships in Karangreja District will produce information that can be used as a reference in developing partnerships in Karangreja District. The section is presented in Table 8.

information obtained from the perception provides an overview of the partnership from the farmer's point of view, so that it gets a good or bad assessment to provide improvements to the work system of the partners. The reason for becoming a partner member is one aspect that becomes a benchmark for assessment in conducting partnerships. The average score generated in the analysis of this

Table 8. Perceptions of Potato Farmers in Karangreja District towards Partnership

Perception Indicator	Average Score	Result
Easy partner registration process	4.43	Very good
There is information regarding pre-partnership	4.14	Well
Binding membership contract	4.24	Well
There is no payment to become a partner member	3.97	Well
Fair and profitable partnership	4.11	good
By participating in farmer partnerships, you will get market certainty	4.09	Well
Prices for partnerships are high and stable	3.96	Well
The price comparison between participating in a partnership with the market price is much different	3.10	Neutral
There is field coaching from partners who can help farmers	3.51	Well
The input and output fee system does not burden farmers	4.03	Well
The marketing process when joining a partnership is easier	3.96	Well
There are business capital loans that really help farmers	3.01	Neutral
Get the freedom to market potato products to the market	1.96	Very Not Good

Table 8 explains the perception of potato farmers who form partnerships with Indofood companies, from the registration process to the freedom to market their crops. The following is the perception of farmers who establish partnerships.

1. Easy partner registration process

The partner member registration process is categorized as very good perception by getting an average score of 4.43, this indicates that farmers think and agree that registration to become a partner member is easy. The main requirement to register as a partner member is to register with the partner coordinator who is in charge of connecting farmers with PT Indofood and making a living as farmers, and owning land to run a farming business. The results of this study are in line with research conducted by Wismawati (2017), that farmers' perceptions of registration to become partner members of the Agribusiness Development Station (ADS) are in

the good category, which indicates that farmers think registration as partner members is easy, because farmers who want to partner only it is enough to come to the partner's side without bringing any requirements, then enter the partner's stage of reviewing the farmers' land.

2. Easy pre-partner information

Smallholders will seek information before entering into a partnership about the benefits that may be obtained from joining a partnership and seek information about the partnership system that will be implemented. The perception of pre-partnership information is easily included in the good category by getting an average score of 4.14. This indicates that farmers think and agree that information about pre-partnership is easy to obtain, such as the registration procedure to become a partner member so that the cooperation system between partners and farmers is easy to find and obtain. The pre-partnership information

was obtained from partner farmers who shared their experiences and information because they had previously joined the partnership. In addition, there is a coordinator from the partner party in Karangreja District who is tasked with providing information to potato farmers who want to do partnerships. The results of this study are in line with the opinion of Saefullah and Mukti (2016), that the experience of other farmers is used as a reference for farmers to find out the benefits that can be obtained if they join a partnership.

3. There is a binding membership contract
The perception of farmers that there is a binding membership contract is categorized as good by getting an average score of 4.24. This indicates that farmers think that there is a binding membership contract between partner companies and farmers when they join the partnership and there are rules that farmers must comply with. The membership contract contains several rules such as the quality of potatoes that must be in accordance with the manufacturer, the selling price, and some post-harvest rules that must be followed, as well as marketing rules that must be followed. Farmers are only allowed to sell their harvests to partners in accordance with the agreed quality, if found selling to other places, farmers will be blacklisted and cannot join the partnership. The results of this study are in line with the research of Salsabila (2021), which states that there is a binding partnership contract, farmers are only allowed to sell their crops to partners and are not allowed to sell to markets or other places.

4. There is no payment to become a partner member

Farmers' perception of no payment to become a partner member is categorized as good with an average score of 3.97. This indicates that the farmers think that in the partnership, the partnership does not charge any fees both in the registration process and during the partnership with the company. So that farmers do not incur additional costs for farming costs when joining the partnership. The results of this study are in line with Sopiana's (2020) research, which states that farmers who want to join in partnerships do not receive payment for registration and during the running of the partnership.

5. Partnership is fair and profitable

Farmers' perceptions of fair and profitable partnerships are categorized as good with an average score of 4.11. This indicates that the

farmers think that the partnership they are running is fair and profitable. Farmers assume that they agree that the partnership is fair and profitable because there is a market guarantee from the partners to buy all the crops produced by the farmers in accordance with the established quality agreement. The results of this study are in line with the research of Wulandari and Salsabila (2021), that most potato farmers in Pangalengan District stated that the partnerships had been profitable and fair but there were still shortcomings felt by potato farmers who entered into partnerships.

6. Farmers get market certainty

Farmers' perceptions of getting market certainty are categorized as good with an average score of 4.09. This indicates that farmers think they will get price and market certainty through the partnership program, this is because the previously partnered farmers have entered into a contract agreement between partner companies to buy all the production produced by potato farmers at the agreed price. The results of this study are in line with Harisman's opinion (2017), that farmers who join partnerships do not look for buyers themselves, because farmers send all their products to partner companies, and partner companies have an obligation to pay for the products produced by farmers.

7. The prevailing price in the partnership is high and stable

Farmers' perceptions of prices prevailing in high and stable partnerships are categorized as good with an average score of 3.96. This indicates that farmers think the prices prevailing in the partnership are stable and quite high, but there are some farmers who say that the market prices are higher than the prices in the partnership. Potato farmers who have partnerships said that there was an increase in the price received by farmers from Rp. 7,100.00 to 7,500.00. According to Purnomo and Abadi (2020), farmers who are in partnership with industry have a mutually agreed price contract regarding the price of potatoes per kilogram.

8. Price comparison between participating in a partnership with a much different market

Farmers' perceptions of the price comparison between participating in a partnership with a much different market are in the neutral category with an average score of 3.10. This indicates that farmers think that there is a much different price comparison between participating in a partnership with other markets.

Most of the farmers think that the price in the market is higher than the price in the partnership. In addition, some farmers said that there was a large price difference between the market price and the price in the partnership. The results of the research by Wulandari and Salsabila (2021), stated that farmers' perceptions of price comparisons that partnered with the market were far different, categorized as either because in 2020 the price of Atlantic Potatoes itself was more stable than that of Granola Potatoes which were affected by the Covid-19 pandemic.

9. There is field development that helps farmers

Farmers' perceptions of the existence of helpful field coaching are included in the good category with an average score of 3.51. This indicates that the existence of field coaching can help farmers when participating in partnerships. In addition, the assistance from partners in running potato farming is very helpful for farmers in the cultivation process so that they can produce maximum production. The results of this study are in line with research conducted by Widi et al, (2020), which stated that some farmers gave a very positive perception of field development which was very helpful for farmers. Although partnership in decision-making is commonly employed as a tool for management of organizations and communities, a true partnership is a rare commodity (Calder, 1995; Cooke and Kothari, 2001).

10. The input and output payment system does not burden farmers

Farmers' perceptions of the input and output payment system do not burden farmers, including the good category with an average score of 4.03. This indicates that farmers think that they agree with the input and output payment system that does not burden farmers, namely with seeds that can be paid after harvest without interest, payments for harvests that can be directly received by farmers and a cash payment system that makes farmers assume that the output payment system and input does not burden the farmer. The results of this study are different from the research conducted by Wulandari and Salsabila (2021), farmers' perceptions of the input and output payment system do not burden farmers categorized as neutral because some farmers have the do not have the freedom to market their agricultural products to other markets when participating in a partnership. This is because

perception that the input and output payment system is divided into transfers and cash. According to farmers, the payment system for the production of partners provides a choice through transfer or cash. Partners prefer to use transfer, but some farmers prefer the cash payment system because it is considered easier 11. The marketing process when participating in a partnership is easier

Farmers' perceptions of the marketing process when participating in partnerships are easier to include in the good category with an average score of 3.96. This indicates that farmers think that marketing will be easier when participating in a partnership. Farmers who participate in the partnership sell potatoes and hand over their agricultural products to the partners, and only sell them to partners because they are already under contract. In addition, by participating in a partnership, farmers assume that the price they receive is more stable than if they do not enter into a partnership. The results of this study are in line with research conducted by Wulandari and Salsabila (2021), which states that farmers who participate in partnerships sell potatoes hand over their agricultural products to partners, and have no difficulty selling to the market because all crops are purchased by partners.

12. There are business capital loans that help farmers

Farmers' perceptions of business capital lending that help farmers are in the neutral category with an average score of 3.01. This indicates that most farmers think that there is no capital loan provided by the partner, but most of the farmers think that there is a capital loan by getting the assistance of imported seeds which can be paid after harvest without interest. The results of this study are in line with Juiwati et.al (2018), that potato farmers of the Atlantic variety obtained a previous capital loan from PT. Indofood Frytolay Makmur. Then the return on capital can be made when the harvest arrives by cutting the price from the sale without any calculation of loan interest.

13. Get freedom to market agricultural products to other markets

Farmers' perceptions of the freedom to market agricultural products to other markets are in the very poor category with an average score of 1.96. This indicates that farmers think that they

partner farmers are already bound by a contract to sell their potato harvest, according to respondent farmers if there are farmers who are

known to the partners to sell crops with specifications set by the partner to other markets, then the farmers are faced with being expelled from the partnership, and farmers are not allowed to follow the partnership again. The results of this study are in line with the research of Wulandari and Salsabila (2021), which stated

that the perception of potato farmers in Pangalengan District who entered into partnerships was categorized as not good because they did not get the freedom to market their crops to other markets.

4 Conclusion

From the results of the study, it can be concluded that the perceptions that are categorized very well are the ease of registration; Meanwhile, perceptions that are categorized as good are information on partnerships, membership contracts, no payments to become members, partnerships are fair and profitable, market certainty, prices are high and stable, there is guidance that helps farmers, and the marketing process through partnerships is easier. Perceptions that fall into the neutral category are price comparisons between participating in partnerships with far different markets and borrowing business capital. Meanwhile, a very bad perception is the freedom to market agricultural products.

AUTHORS' CONTRIBUTIONS

Dindy Darmawati Putri designs models, analyzes data and makes research reports

Irene Kartika Eka Wijayanti, Altri Mulyani and Ratna Satriani conducted data collection in the field and helped tabulate the data

Agus Sutanto, Djeimy Kusnaman and Suyono made scientific articles

ACKNOWLEDGMENTS

This research was funded by BLU funds, Jenderal Soedirman University through the Institutional Research scheme.

Thank you to the LPPM UNSOED, Research and Community Service Institute, the Karangreja District Farmers Group and the Related Offices who have supported in the implementation of this research.

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