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Can organic rice agribusiness increase farmers' income? between expectations and reality

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Abstract

The shift to organic rice farming is gaining global attention as a sustainable and environmentally friendly alternative to conventional farming. However, the economic viability of organic rice agribusiness, especially its impact on farmers' income, remains uncertain for farmers in several regions. This study examines whether organic rice agribusiness can effectively increase farmers' income in the East Priangan region of West Java Province. Using a mixed methods approach, data were collected from 120 rice farmers, including those using organic and conventional systems. The analysis involved comparing production costs, yields, and selling prices, as well as conducting interviews to understand market access and farmers' perceptions. Although organic rice is generally expected to command a higher selling price due to its quality and environmental benefits, the study's results reveal a different reality. Since the outbreak of the COVID-19 pandemic, the export market for organic rice has collapsed, leading to a significant decline in international buyer interest. Consequently, organic rice can now only be sold in the domestic market at prices comparable to, or slightly higher than, conventional rice. This situation diminishes farmers' hopes of increasing their income, despite savings on input costs and contributions to environmental sustainability. In fact, organic rice does not appear to improve farmers' welfare. Many farmers expressed disappointment over the gap between market expectations and actual market conditions. The study concludes that without stable premium market access, particularly for exports, the financial sustainability of organic rice agribusiness remains fragile. Policy recommendations include market diversification, improvements to the domestic organic certification system, and strengthening institutional support to stabilize demand and prices for organic products.

Keywords: Agribusiness failure, COVID-19, Export disruption, Farmer income, Organic rice, Sustainable agriculture.

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1. Introduction

Organic farming has emerged as one of the leading approaches to addressing global agricultural sustainability challenges. It offers solutions to environmental degradation, consumer health, and dependence on synthetic chemical inputs [1].

Global demand for organic food products continues to increase, along with growing consumer awareness of health and environmental sustainability [2]. Organic farming, as an alternative approach to conventional farming systems, not only promises positive impacts on the environment but is also believed to be able to increase farmers' income through higher selling prices [3]. Theoretically, organic agricultural products have added value because they are sold at higher prices in domestic and export markets [2]. Several empirical studies have shown that, although organic yields tend to be lower, farmers' incomes can remain high due to reduced input costs and better selling prices [4-6].

In many developing countries, such as Indonesia, organic farming, especially for major commodities such as rice is promoted not only for ecological reasons but also as a strategy to increase farmers' income through access to premium and international markets [7, 8]. However, the fact is that the success of organic rice agribusiness does not always meet expectations. Although farmers have switched to organic farming systems in the hope of obtaining premium prices and access to export markets, the reality on the ground shows otherwise. Research by Setboonsarng et al. [9] shows that the success of organic agribusiness is highly dependent on the stability of the value chain and market support. The COVID-19 pandemic has exacerbated this situation, causing major disruptions to global trade; many export markets have stopped operating, including exports of organic products [10]. Many organic farmers are forced to sell their crops in local markets at prices close to or even below production costs, without receiving the promised premium prices [10, 11]. In addition, other challenges such as certification costs, limited access to information, and weak market infrastructure also hamper the economic benefits of organic farming systems [12, 13].

Likewise, what happened in the East Priangan region of West Java Province, Indonesia, consists of 6 districts and cities with a total area of 9,051.37 km^2 or around 24.35 percent of the total area of West Java Province, which is 37,174 km^2. It has become a center for rice farming as well as a research area. Based on field data, the number of farmers cultivating organic rice has shown a significant decline. In 2015, there were around 2,500 people, decreasing to 427 people in 2016, and after COVID-19 (2021), there were only 150 people left. Field issues state that the decline in the number of farmers cultivating organic rice is partly due to the decreasing income of farmers because buyers of organic rice from abroad have stopped since the restrictions during the COVID-19 era, even though farmers really hope that their products will be purchased by importers at premium prices. After the buyer from abroad stopped, they sell organic rice in the domestic market, but the price is valued equivalent to bulk rice that is cultivated conventionally. Another issue is that the organic rice certificate used so far has expired, and farmers are unable to carry out re-certification because the certification costs are expensive, even though this organic certificate is important as a guarantee that their products are certified organic. In addition, from the cultivation technique side, there are complaints, especially the scarcity of organic fertilizer needed for organic rice cultivation.

This situation raises a critical question: can organic rice agribusiness really increase farmers' income sustainably, or does it actually cause disappointment due to market expectations not being met? To answer this question, a study was conducted that aimed to compare the income of organic and non-organic farmers and to examine the gap between expectations and reality in organic rice agribusiness practices in the study area. This study is expected to provide empirical contributions to agribusiness decision-making, as well as provide input for policymakers in designing more targeted interventions to support sustainable organic farming.

2. Method

2.1. Types and Approaches of Research

This research uses the case study method, as well as a mixed methods approach. The study aims to measure the economic aspects of organic rice agribusiness, especially farmer income, objectively. The qualitative approach is used to explore farmers' perceptions, expectations, and experiences that are not captured by numerical data [6].

2.2. Location and Time of Research

The research location in the East Priangan region consists of Tasikmalaya Regency and City, Ciamis Regency, Garut Regency, Pangandaran Regency, and Banjar City, which are organic rice development areas in West Java Province, Indonesia. The location selection was carried out purposively based on the intensity of organic farming practices and access to domestic and export markets. The research was conducted from January to May 2025, including field observations, questionnaire distribution, and interviews.

2.3. Sampling Techniques

The sample was determined by purposive sampling, which is a sampling technique based on the consideration of certain characteristics [14]. In this case, the sample consisted of two groups of farmers, namely 30 organic rice farmers and 30 conventional (non-organic) rice farmers. Stratification was carried out to ensure comparison between the two groups, in order to identify differences in income and the implementation of the organic rice agribusiness being conducted.

2.4. Data Collection Techniques

Data was collected through three main techniques, and the combination of these techniques was carried out to increase the validity and depth of the data [15].

- Questionnaire: used to collect quantitative data related to production costs, harvest yields, selling prices, and income.
- In-depth interview: exploring farmers' narratives about expectations towards organic agribusiness, constraints, and market realities.
- Documentation: includes farmer group reports, data from the agricultural service, and sales archives.

2.5. Data Analysis Techniques

Data analysis was conducted in two stages, and the mixed-methods approach allowed for data triangulation and strengthened the conclusions resulting from the research [16], consisting of:

1. Quantitative analysis by performing mean difference tests such as an *independent sample t-test* or *ANOVA* to compare income between organic and non-organic farmers [17].
2. Qualitative analysis: Thematic analysis was conducted on interview data to extract key issues in the gap between expectations and reality.

3. Results and Discussion

Based on the results of the research that has been conducted, the following results were obtained:

3.1. Respondent Characteristics

Respondent characteristics include age, education, business experience, and the number of family dependents, as can be seen in the following table.

Table 1.
Characteristics of Respondents of Organic Rice Farmers and Inorganic Rice Farmers.

No	Characteristics	Rice Farmer Organic		Rice Farmer Non-Organic	
		Number of people)	%	Amount (person)	%
I.	Age of Respondent:				
	a.20-30	2	6.67	1	3.33
	b.31-41	9	30.00	7	23.33
	c.42-52	15	50.00	9	30.00
	d.53-64	3	10.00	10	33.33
	e. >64	1	3.33	3	10.00
	Amount	30	100.00	30	100.00
II.	Education:				
	a. Finished Elementary School	-	0	7	23.33
	b. Graduated from Junior High School/SMP	9	30.00	13	43.33
	c. Graduated from high school	12	40.00	8	26.67
	d. Diploma 1/2/3	8	26.67	2	6.67
	e. Bachelor /S1/S2	1	3.33	-	0
	Amount	30	100.00	30	100.00
III.	Number of family dependents (people):				
	a.1-2	15	50.00	11	36.67
	b.3-4	11	36.67	12	40.00
	c.>4	4	13.33	7	23.33
	Amount	30	100.00	30	100.00
IV.	Farming experience (years):				
	a.1-5	2	6.67	5	16.67
	b.6-10	25	83.33	13	43.33
	c.> 10	3	10.00	12	40.00
	Amount	30	100.00	30	100.00

Based on the research results, most of the respondents, both organic and non-organic farmers, are in the productive age range, namely between 20 years and 64 years. Only about 3 percent of organic farmers and 10 percent of non-organic farmers are no longer productive. However, they still carry out cultivation activities because of their experience. Most of the farming experience is for 6-10 years, with the number of family dependents mostly between 1 and 4 people. Most organic farmers have a higher level of education (high school and above) compared to conventional farmers. This characteristic is in line with the findings of Setboonsarng et al. [9] which shows that organic farmers tend to have better access to information and market networks.

3.2. Average Productivity

Rate of organic rice productivity in the research area varies greatly, between 4.80 tons/ha of GKG (Dry Milled Grain)

and 5.27 tons/ha of GKG. This average productivity is still lower than the average productivity of conventional rice in the research area, which has reached 5.43 ha [6]. The results of research on organic rice farming in several regions also show varying results. The productivity of organic rice, which is still low and sometimes lower when compared to conventional rice farming, does not match the expectations of farmers and the information obtained previously that organic rice productivity in the long term will increase and be higher than conventional rice farming [18, 19]. This lower productivity of organic products is in line with what Merfield et al. [20], Moudrý et al. [21], Udin [22] and Mäder et al. [23] that organic farming results are generally lower by around 20% compared to conventional farming. These factors contribute to the less developed state of organic rice agribusiness in the East Priangan region when viewed from the productivity perspective.

3.3. Comparison of Organic vs Conventional Farmers' Income

Although the productivity of organic rice is still slightly below that of conventional rice, before the COVID-19 pandemic, the income of organic rice farmers was quite promising because organic rice production was absorbed by the export market with a premium rice price of IDR 90,000.-/kg, so the income of organic rice farmers was very large. Currently, the R/C (ratio between Revenue and Cost) is 2.15, meaning that every rupiah of costs incurred will generate an income of 2.15 rupiah with a profit of 1.15 rupiah. This is higher than the R/C ratio of conventional rice farming, which is 1.18. The conclusion is that organic farming provides greater benefits and has a real impact on farmers' income [24, 25]. In general, organic farmers' income per planting season is higher than that of conventional farmers, with an average net income of IDR 6 million per hectare compared to IDR 4.2 million per hectare for conventional farmers. This difference is statistically significant ($p < 0.05$) based on the results of the t-test. This is in line with a study by Crowder and Reganold [6] which found that organic systems can be more financially profitable in the long term due to lower input costs and higher selling prices.

However, this condition can no longer be felt by organic rice farmers. This is because foreign buyers have stopped purchasing organic rice since the COVID-19 pandemic. After the foreign market ceased buying organic rice products from the research area, farmers finally shifted their market to the domestic market, but unfortunately, the domestic market responded poorly. As a result, the price of organic products is now comparable to the price of bulk rice from conventional rice cultivation, averaging IDR 11,000 to IDR 12,500 per kg. This situation has caused farmers' incomes to decrease drastically again, aligning with the income from conventional rice cultivation. Ultimately, this has led organic rice farmers to revert to conventional rice farming.

3.4. Farmers' Expectations on Premium Prices and Market Access

From the farmer's perspective, economic factors are a consideration for carrying out their farming business and will determine its sustainability. These economic factors include the hope of obtaining a higher premium price for organic rice products compared to the price of conventional rice. However, since the COVID-19 pandemic, the price of organic rice products in the research area has not been significantly different from the price of conventional rice. At the time of the study, the price of organic rice grain was IDR 550,000 per quintal GKG (Dry Milled Grain), while the price of conventional rice grain ranged between IDR 450,000 and IDR 500,000 per quintal GKG. It often happens that the quality of organic rice is valued the same as the price of conventional rice, partly due to the limited market. This fact is different from that revealed by Crowder and Reganold [6] that another factor that can influence the economic results of organic farming is the possibility of getting high prices. In addition, Berentsen et al. [26] and Mayrowani [18] revealed that one of the factors influencing farmers' decisions to adopt organic farming is the increase in farmers' income due to higher selling prices compared to conventional rice, and in reality, this did not occur in the research area. So, the dynamics in the field like this are what ultimately cause organic rice agribusiness in the East Priangan region to be less sustainable in terms of product price aspects.

The majority of organic farmers expect to receive a premium price of 20–30% higher than conventional prices. They also expect stable market access, especially to export markets and modern retail. These expectations are influenced by training and promotion from certification bodies and supporting NGOs [7]. However, these expectations are not always realized, especially after the COVID-19 pandemic.

3.5. Ground Reality: Weak Domestic Market and the Impact of COVID-19

The COVID-19 pandemic has disrupted the export supply chain, and foreign buyers have abruptly terminated purchase contracts. Organic rice products in the form of rice are finally sold in the domestic market at prices almost the same as conventional rice, which is only around IDR 11,000/kg-12,500/kg. This finding is in line with the report of Rahman et al. [10] which shows that the organic product market in Asia is highly vulnerable to external disruptions due to weak domestic infrastructure and lack of market diversification.

3.6. Key Barriers: Certification, Marketing, and Production Costs

Some of the main obstacles experienced by farmers who cultivate organic rice include the high cost of organic rice certification and the short inspection period (*surveillance*) for organic rice certification, which is only one year, resulting in suboptimal performance. This is in accordance with the opinions of Pompratansombat et al. [27] and Andang [28] that the obstacle to organic food development is related to organic certification, which is too expensive and burdensome for farmers, causing the selling price to consumers to be high.

Organic food certification involves a series of activities related to the issuance of certificates, serving as written guarantees provided by accredited certification bodies to confirm that products meet the established standards for the

organic food system.

Until now, there have been many certification bodies involved in organic rice certification in Indonesia. In the research area, the certification bodies that have been used include IMO (*Institute for Marketecology Organic*), PT Sucofindo, BioCERT, IFOAM, and INOFICE (*Indonesian Organic Farming Certification*).

The coverage area of East Priangan in 2015 recorded 8,831 ha of organic rice areas, most of which have been IMO certified (*Institute for Marketecology*), which is 8,100 ha (91.72%), by Inofice (*Indonesian Organic Farming Certification*) covering an area of 3.60 ha (0.04%), and an area still in the certification process of 728 ha (8.24%).

One period of issuing an organic rice certificate is valid for 3 (three) years, with costs varying between certification bodies, ranging from IDR 9 million to IDR 30 million. Usually, it is calculated based on the location, area, and complexity of the scope submitted by the applicant [29]. The high cost of certification is one of the obstacles in the development of organic rice in the research area. In general, the initial certification costs carried out by farmers/Farmer Group Associations come from assistance from the Department of Agriculture, exporters, Bank Indonesia, but when the certification period ends, certification has not carried out again due to financing constraints. If borne by farmers, this cost is very burdensome and cannot be afforded by farmers.

To guarantee product quality, certification bodies carry out supervision (*surveillance*) once a year and annual certificate renewal, unscheduled or risk-based visits (consumer complaints, suspicions, etc.) with/without prior notification to the business actor. Costs for the implementation of *surveillance* include certification institutions that determine the cost at half of the initial certification cost or at Rp. 7.5 million - Rp. 15 million. This is often complained about and is a problem for farmers because it is very burdensome for organic rice farmers. This is also in accordance with what was stated [13] stated that the high costs of organic certification mean that not all farmers can afford it.

3.7. Discussion of Previous Theories and Studies (Confirmation or Contradiction)

The results of this study generally confirm the theory of long-term financial benefits from organic farming as proposed by Crowder and Reganold [6]. However, contradictorily, these findings also show that the economic success of organic agribusiness is highly dependent on market stability and sustainable export access factors that have previously been underemphasized in the literature. The weak domestic market situation and low government support underscore the need to strengthen local value chains, as suggested in studies by Delbridge et al. [11] and Willer et al. [2].

4. Conclusion

This study shows that, in general, organic rice agribusiness has the potential to increase farmers' incomes, especially due to lower input costs and premium prices in certain markets. However, this potential is not always realized consistently, particularly in areas that do not yet have strong market access or experience supply chain disruptions, such as those caused by the COVID-19 pandemic.

Although some organic farmers report higher incomes than conventional farmers, this is highly dependent on the availability of premium markets, stable demand, and institutional support. Without these components, the financial returns from organic farming systems are unstable.

4.1. Research Limitations

This study has limitations related to the availability of secondary data on organic rice exports from Tasikmalaya Regency in the period 2015 to 2025. Until this study was conducted, there was no official data containing the volume, value, and destination of organic rice exports specifically from the district level in national publications such as BPS, the Ministry of Agriculture, or customs agencies. In addition, organic commodity export data in Indonesia are generally not separated in detail in official trade statistics.

Therefore, this study fully utilizes primary data collected through field surveys, in-depth interviews, and observations of organic and non-organic rice farmers in the study area, and strengthens the analysis through a local case study approach. The findings reflect the actual conditions experienced by farmers at the site level but cannot be generalized nationally without broader aggregate comparative data.

It is hoped that these limitations can serve as a basis for further research that encourages openness of organic export data at the regional level, as well as improving the system for recording and reporting organic commodities separately in national statistics.

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