



Indonesian Rice Farm Households' Perceived Effect of COVID-19 Pandemic

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Received: 2022-03-02
Accepted: 2022-03-24
Published: 2022-03-25

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ABSTRACT

Rice is one of the most significant commodities in Indonesian agricultural sector and it is also the largest employer in rural areas. The majority of rice farmers fall into the category of subsistence farmers, who engage in agricultural production not just for commercial goals but also to meet domestic demand for food. The aims of this study is to understand the scope of the COVID-19 pandemic's influence on rice farmers and production. By utilizing a questionnaire, we descriptively present the socio-economic characteristics of 80 rice farmers in Kulon Progo Regency. The likert scale is used to elicit the perceived effect of the COVID-19 pandemic on the rice farmers. According to the findings, most rice farmers are poor and vulnerable to the effects of the COVID-19 pandemic. The coronary disease outbreak negatively impacts rice farm households by affecting farmers' health, reducing sales, limiting the ability to replant, decreasing agricultural input availability, lowering household income, and limiting primary food access. On the other hand, the majority of respondents in this study state that there is no labor scarcity on the farm during the outbreak due to employing the family members to labor on the fields.

Keywords: rice farmers, perceived effect, COVID-19 pandemic

BACKGROUND

The COVID-19 pandemic has severely impacted the world economy. In general, the economic downturn and recession impacted society in various ways, including rising food prices, diminishing purchasing power, the threat of losing their employment, and the necessity for more government social assistance (Pulighe & Lupia, 2020). Due to regional border closures, lockdowns, and traffic cutbacks, COVID-19 has significantly impacted supply chains and logistics, both for producers and consumers. This poses a major danger to society's access to different goods and services.

The agricultural sector is also directly challenged by the policy of limiting movement space, particularly in terms of stabilizing commodity prices, disrupting input and output supply chains, disrupting production owing to labor shortages, and subsequently affecting food security (Adhikari, Timsina, Khadka, Ghale, & Ojha, 2021; Gu & Wang, 2020; Kumar et al., 2021; Poudel et al., 2020; Rivera-Ferre et al., 2021; Siche, 2020; Workie, Mackolil, Nyika, & Ramadas, 2020). Although research of COVID-19 impacts on agriculture and food security is proliferating, few studies examine the impact of COVID-19 on farmer households, especially rice farmers (Esiobu, 2020; Fox, Promkhambut, & Yokying, 2020).

Rice is one of the most significant commodities in the agricultural sector. It has long been a basic need for the Indonesian people and also the largest employer in rural areas (Fadhliani, Luckstead, & Wailes, 2019). Unfortunately, the majority of those employed in this industry live below or just above the poverty line. According to the World Bank, 34,3 million agricultural

workers are poor or at risk of becoming poor because they earn less than US\$ 1,90 a day (World Bank, 2015). Therefore, COVID-19 will most certainly have a more significant and longer-lasting impact on the poor, who are vulnerable to job loss, food costs rise, and health care disruptions.

The majority of rice farmers fall into the category of subsistence farmers, who engage in agricultural production not just for commercial goals but also to meet domestic demand for food. Therefore, it is critical to understand the scope of the COVID-19 pandemic's influence on rice farmers and production, particularly in terms of input availability and income. This study aims to describe the socio-economic characteristics of the rice farmers and ascertain the perceived effect of the COVID-19 pandemic on rice farmers. This information will benefit policymakers in figuring out the best techniques or solutions for dealing with the challenges that rice farmers faced during the COVID-19 era.

METHODS

Research Location and Data Collection

This study is carried out in the Kulon Progo District of Yogyakarta's Special Region since it features one of the province's largest farmer populations. The current study also relies on primary data acquired by a questionnaire, which is reinforced by an interview schedule. To collect data from the respondents, the authors created and employed a COVID-19 risk and efficacy questionnaire. The questionnaire includes both open-ended and closed-ended questions. Similarly, before administering the questionnaire to the respondents, it is carefully submitted to content validity with the support of the research supervisors. There are two sections of the questionnaire. The farmers' socio-economic characteristics are discussed in the first section. The second section assesses rice farmers' perceived effect of the COVID-19 epidemic. The interview is conducted among 80 rice farmers in the Kulon Progo Regency of Indonesia in Mei 2021.

Data Analysis

The data is analyzed using descriptive statistical methods to achieve the aims of this study. Descriptive statistics such as frequency distribution, percentages, mean, and 3-point Likert scale types are utilized to examine the data. The three-point Likert scale was as follows: 1 = disagree, 2 = neutral, and 3 = agree. The following formula from Dewi, Nugroho, & Jamhari (2021) was used to convert the average Likert score of each question from all respondents:

$$\text{Index} = \frac{\text{total respondents score}}{\text{the highest score}} \dots\dots\dots (1)$$

The results were categorized into three effect categories e.i, positive, neutral, and negative (Table.1).

Table 1. Effect Characteristic Criteria

Interval	Effect Category
0 – 33,32%	Positive
33,33 – 66,65%	Neutral
66,66 – 100%	Negative

RESULTS AND DISCUSSION

Socio-economic Characteristics of Rural Rice Farmers in Kulon Progo

According to the findings, nearly 95% of the farmers had formal education, which is likely to improve their understanding of COVID-19's impact on rice farms and the numerous techniques to combat these new dangers (Esiobu, 2020). Table 2 also indicates that a higher proportion (37,50%) has completed secondary school. The average educational level is ten years, comparable to a high school diploma. Table 2 shows that almost half of the respondents (47,50%) have an average farm

income of 1 million to 2 million Rupiah in one farming season. With most households consisting of three to five people, the farmers' farm revenue is relatively poor.

Furthermore, just 30% of farmers have access to agricultural loans, implying that farmers may lack the necessary funds to counteract the harmful impact of the COVID-19 pandemic on their rice growing. This is true since some COVID-19 pandemic mitigation techniques are expensive (Gros, Valenti, Schneider, Valenti, & Gros, 2021). As a result, farmers may have multiple COVID-19 pandemic tactics in mind, but a lack of funds may prevent them from doing so. The majority of the farmers (90%) owned farms less than 0,5 hectares in size. The average size of a farm is 0,2 hectares. According to the findings, the farmers in the area are predominantly smallholder farmers, who are particularly vulnerable to COVID-19. Small business owners have been proven in studies to be unable to pay ongoing expenses and survive the closure policy regulations (Akabay, Khalil, & Odel, 2021).

Table 2 demonstrates the results of the farming experience survey, which revealed that around 83,75% of the farmers had more than ten years of agricultural experience, with the average year of experience being 25 years. This demonstrates that the farmers were well-versed in rice farming and had begun implementing many COVID-19 epidemic tactics to boost their farm productivity and revenue in the area. According to one study, farmers with more experience are more likely to adopt innovations to increase farm productivity and profitability during the COVID-19 pandemic than farmers with less experience (Esiobu, 2020). Various infectious diseases have occurred globally in the past, i.e., the Spanish flu in 1918, the AIDS pandemic and epidemic in 1981, the H1N1 Swine Flu pandemic in 2009-2010, the West African Ebola epidemic in 2014, and the Zika Virus epidemic in 2015; thus, the number of years of farming helps to cushion the effects of the COVID-19 pandemic. However, this is not necessarily relevant to Indonesian farmers. In Indonesia, the spread and severity of diseases and infections mentioned in the previous study are insignificant compared to other countries. Therefore, although the farmers in the research location have sufficient experience in farming, they do not have experience in mitigating the impact of the pandemic on their farming business.

Table 2. Socio-economic Characteristics of Rural Rice Farmers

Descriptive and Scale	Number of respondents	Percentage	Mean
Age (Year)			
Less than 40 = 1	6	7,5	55
40 to 59 = 2	49	61,25	
60 or above = 3	25	31,25	
Gender			
Male = 1	70	87,5	
Female = 2	10	12,5	
Education			
No Formal Education= 1	4	5	10
Elementary = 2	16	20	
Middle School = 3	26	32,5	
High School = 4	30	37,5	
College or University = 5	4	5	
Household Size (Number of Persons)			
Less than 3 = 1	13	16,25	4
3 to 5 = 2	54	67,5	
6 or more = 3	13	16,25	
Income (1 USD = Rp 14.000)			
Less than 1 million Rupiah = 1	14	17,5	1.900.000,00

Descriptive and Scale	Number of respondents	Percentage	Mean
1 million to 2 million Rupiah = 2	28	47,5	
more than 2 million Rupiah = 3	38	35	
Area (Hectare)			
< 0.5 = 1	72	90	0,2
≥ 0.5 = 2	8	10	
Farming experience (Year)			
< 5 = 1	3	3,75	25
5 to 10 = 2	10	12,5	
>10 = 3	67	83,75	
Agricultural Loan			
Yes = 1	24	30	
No = 2	56	70	

Source: Primary Data, 2021.

Rice Farmers' Perceived Effect of COVID-19 pandemic

The validity and reliability test is the first stage in examining the data in this study to determine that the question items are correct and may be used for research. The validity and reliability tests revealed that all of the questions were valid and reliable, allowing them to be used in this study. It shows the outcomes of 80 interviews.

The perceived effect was calculated using the eight indicators listed in Table 3. The overall score of the statements reached 87,21%, indicating that farmers saw the COVID-19 pandemic as having a negative impact. This result strongly confirmed that COVID-19 pandemic is seriously affecting rice farmers in the area.

Since March 2020, the COVID-19 pandemic has caused a partial closure of all agricultural institutions in the country. It disrupts rice activities such as harvesting for the 2019/2020 planting season, which runs from November 2019 to March 2020, and land preparations in April 2020 for the first planting season of 2020/2021. As a result of the weak transportation system and partial shutdown, supply chains for purchasing inputs have been disrupted (92,5%). As the consequence, rice farmers are having trouble starting to plant the crop. This contributed to a 7,7% decline in rice production in the Kulon Progo Regency in 2020 (Badan Pusat Statistik, 2020). Furthermore, partial lockdown as a tactic to contain the spread of the COVID-19 has severely curtailed market access, preventing farmers from selling their products outside of the province. Farmers' earnings from rice farming activities are reduced due to lower productivity and limited market access.

Farmers' revenue from non-farming activities has also decreased as a result of the COVID-19 pandemic. Rice farmers in the region typically take part-time or seasonal jobs as construction laborers or in the home industry. Farmers have lost their side jobs as a result of the implementation of activity restriction policies. This had a detrimental influence on the income of the farmers' households as a whole. Farmers have had difficulty obtaining basic food supplies as a result of income losses and increasing food prices. Small-scale farmers' revenues are already far below the amount required for an essential existence even before COVID-19 hit (Segal & Minh, 2019). As a result, the present COVID-19 pandemic exacerbates the situation. According to Janssens et al., (2021), the COVID-19 pandemic has intensified food insecurity in low-income families and caused many poor households to adopt less healthful diets.

This study shows that farmers are not experiencing labor shortages despite numerous studies that have found that the lockdown has had a negative influence on agricultural labor (Ceballos, Kannan, & Kramer, 2020; Kumar et al., 2021; Leonardelli et al., 2021). In Indonesia, small farmers with 0,2 hectares of land will frequently employ a family member to labor on the fields. This is because farmers grow their land and prefer to distribute all work among family members. This method will also reduce contact with other people and hence the risk of infection and agricultural input costs, given the difficulties in commercializing the output. As a result, even during the COVID-19 outbreak, farms do not have labor shortages.

Table 3. Rice Farmers' Perceived Effect of COVID-19 pandemic

No	Statement	Average Score	Percentage	Effect per Indicators
1	COVID-19 pandemic has threatened the health of farmers.	2,74	91,3	Negative
2	COVID-19 pandemic has caused difficulty to commercialize the crop.	2,70	90,0	Negative
3	COVID-19 Has reduced ability to replant during the growing season	2,78	92,5	Negative
4	COVID-19 Has reduced the availability of inputs used in rice farming.	2,78	92,5	Negative
5	COVID-19 has led to a decrease in the revenue of rice farming.	2,78	92,5	Negative
6	COVID-19 has reduced the household income.	2,83	94,2	Negative
7	COVID-19 has reduced the ability to obtain essential food items.	2,91	97,1	Negative
8	COVID-19 has led to a shortage of farm labors.	1,43	47,7	Neutral
Total Effect		2,62	87,21	Negative

Source: Primary Data, 2021.

CONCLUSION

According to the findings, most rice farmers are poor and vulnerable to the effects of the COVID-19 epidemic. The coronary disease outbreak negatively impacts rice farm households by affecting farmers' health (91,3%), reducing sales (90.0%), limiting the ability to replant (92.5%), decreasing agricultural input availability (92.5%), lowering household income (94.2%), and limiting primary food access (97.7). On the other hand, the majority of respondents in this study stated that there is no labor scarcity on the farm (47.7) during an outbreak of coronary disease.

ACKNOWLEDGEMENT

We would like to thank the Faculty of Agriculture Universitas Gadjah Mada for financially supporting this study and we are grateful to the editor and an anonymous reviewer for their valuable suggestions to improve the manuscript.

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