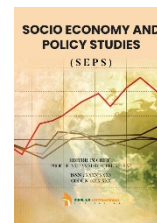


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## RESEARCH ARTICLE

# THE EFFECT OF LABOR UTILIZATION AND RICE FARMING INCOME DUE TO COVID-19 IN KENDAL REGENCY

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## ARTICLE DETAILS

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## ABSTRACT

The Covid-19 attack had a negative impact on the economy and human health. At the beginning of the pandemic period in the second quarter of 2020, the GDP of all agricultural sector businesses experienced positive growth and the food crop sub-sector made the largest contribution. On the other hand, employment in the agricultural sector decreased 0.42%. The purpose of this paper is to determine the effect of the Covid-19 pandemic on labor use and rice farming income in Kendal Regency. The effect of the use of labor is reflected in the input-output table. Income changes use a partial budget analysis. From the results of the analysis, it can be seen that the farmer's income has decreased by Rp. 2,785,000 per ha. The decline in income was due to a 26% decrease in production. The decline in production is due to farmers reducing their use of fertilizers and medicines. During the pandemic, farmers reduced the use of outside labor from 87% to 69%. In order to reduce farmers' losses, it is recommended that the government help provide input production facilities which are distributed directly to farmers, and reduce crowds by increasing the availability and use of agricultural tools (mechanization).

## KEYWORDS

Covid-19, pandemic, agricultural, labor, farming

## 1. INTRODUCTION

The Covid-19 pandemic has had many negative impacts in various sectors and one of them is the agricultural sector. Sudaryanto et al. (2020) mentions several components that will be directly affected by the Covid-19 pandemic, including (1) the health of farmers and agricultural business actors, (2) productivity and food production, (3) agricultural labor in rural areas, (4) distribution foodstuffs and other agricultural products, (5) food consumption for the population, and (6) prices for food products.

Covid-19 is a contagious disease that easily attacks vulnerable groups and one of these vulnerable groups is the elderly. Meanwhile, the workforce in the agricultural sector is generally not young anymore (Hanri dan Sholihah 2020). Based on the results of the Agricultural Census conducted by BPS (2013), it shows that the group of agricultural workers aged 40 to 55 years reaches 60%. The results of the PSEKP study (2016) suggest that rural workers in Java aged 45-64 years reach 52%.

By threatening the health and safety of workers, farming activities will be disrupted due to the limited number of workers. Apart from changing the availability of labor, other changes in farming activities based on the results of PRISMA's research (2020) are: changes in the planting season, changes in daily agricultural activities, changes in cultivated commodities, expansion of land, and changes in capital farming. To deal with the Covid-19 pandemic, farmer resilience is needed. Kinseng (2019) explains that the concept of endurance can be understood through three types of capacity, namely coping capacity, adaptive capacity and transformativ capacity. These three capacities can be used to measure the level of resilience of an entity being analyzed (Ulya NH, 2020), which can be individuals or groups of people (communities).

Previously, CARRI (2013) had defined resilience in community groups as

the capability to anticipate risk, limit impact, and bounce back rapidly through survival, adaptability, evolution and growth in the face of turbulent change (Nurwati, 2020). Based on this definition, community resilience is defined as the ability of the community to survive and adapt and overcome the impact of a disturbance. Based on the explanation above, this paper aims to determine the impact of the utilization of rice cultivation labor, as well as the effect on farmers' income due to the disruption of the Covid-19 pandemic attack in Kendal Regency.

## 2. METHODOLOGY

The research was conducted in 2020 in Kendal Regency, which is one of the rice production centers in Central Java Province. This study uses secondary data obtained from BPS and primary data obtained from the Kendal Regency Agriculture Office. Primary data is processed in the form of a table of rice farming costs structure to determine changes in labor use. Meanwhile, to determine the impact of rice farming income, a partial budget analysis is used.

Partial budget is an analysis that is used to see or calculate the nominal profit or loss of a farm due to a change in policy. The formula for calculating the partial budget analysis used is:

$$A = B - C$$

Information:

A is the change in income (profit or loss)

B is the profit component

C is the loss component

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### 3. RESULT AND DISCUSSIONS

#### 3.1 Impact of Covid-19 on Business Fields

Most of the workforce in business fields affected by the economic crisis due to the COVID-19 pandemic, except in the construction sector, comes from the middle class. If a shock occurs, this middle group will certainly have a better ability to survive than the poorer groups of society (bottom 40%) because they may still have savings or social assets. However, the COVID-19 pandemic, which began to be detected in Indonesia in early March 2020, had a negative impact on labor conditions in Indonesia. The reduction in economic and social activities undertaken to prevent the spread of COVID-19 in Indonesia and in various trading partner countries of Indonesia resulted in contractions in various economic sectors so that a number of workers had to be temporarily dismissed and some even

experienced terminations (Rahman et al, 2020).

Indonesia's economic growth was corrected during the Covid-19 pandemic. According to the BPS report in August 2020, Indonesia's economic growth in the second quarter of 2020 was minus 5.32%. On the other hand, the growth in the agricultural sector has actually experienced a positive increase by contributing 15.46% to the structure of Indonesia's GDP growth. This contribution value increased from the same period in the previous year, which was 13.57%. This positive contribution can also be seen from the development of GDP based on the food crop business field (Rahman et al, 2020). This can be seen in nominal developments, where in the fourth quarter of 2019 the GDP of food crops was 71,806 billion, then increased in the first quarter of 2020 to 115,527 billion and increased again in the second quarter of 2020 to 153,637 billion (Table 1).

**Table 1: Quarterly GDP Development on the basis of Prices Apply According to Business Field (billion)**

No	GDP of Business Fields	Quarter IV 2019		Quarter I 2020		Quarter II 2020	
		Nominal	%	Nominal	%	Nominal	%
1	Crops	71.806	22,88	115.527	20,32	153.637	35,13
2	Horticultural plants	53.945	17,19	56.902	10,01	66.760	15,27
3	Plantation crops	118.578	37,79	123.138	21,66	143.911	32,91
4	Animal husbandry	62.969	20,07	265.522	46,70	65.077	14,88
5	Agricultural services	6.518	2,08	7.533	1,32	7.947	1,82
6	Total	313.816	100,00	568.622	100,00	437.332	100,00

Source : BPS 2020

#### 3.2 Impact of Covid-19 on Workforce

The development of the working age population in Indonesia has increased by an average of 1.5% each year (Table 2). This addition will indirectly lead to an increase in the working population (Syahrial, 2020). But if we look at the percentage of development, it can be seen that there are differences before the Covid-19 period and during the Covid-19 period. Prior to the Covid-19 pandemic attack, the increase in the working population was 1.80%. After the Covid-19 pandemic attack, the increase in the working population fell to 1.29%.

The reduction in the working population is one of the negative impacts of the implementation of the policy to restrict social movement, which limits the accessibility and mobility of the workforce. This impact is felt by workers in urban areas, especially workers who work in trade centers, factories and transportation services (Kurniasih E, Panca, 2020). These problematic workers will generally return to the village and switch professions from non-agricultural activities back to agricultural activities (Yuniar, 2020). This transition of professions is in line with the results of a study by Briones (2019) which reveals that in Asian and Pacific countries, labor force participation is higher in rural areas.

The agricultural sector itself is affected by social restrictions, such as disruption in: distribution of agricultural inputs, provision of farm labor, marketing of agricultural products from traders to consumers (Zulfa et al, 2020). This impact will directly correct the production and distribution of agricultural products. For workers in the agricultural sector, according to Purwantini et al (2020), there was a negative growth during the Covid-19 pandemic, which was corrected by 0.42%.

#### 3.3 The Impact of the COVID-19 Pandemic on Rice Farming in Kendal Regency

Kendal Regency has an area of 1,001 km<sup>2</sup> and is ranked 20th as the largest district in Central Java Province. In general, the Kendal Regency area is divided into 2 parts, namely the lowlands in the North and the highlands in the South. There are 12 sub-districts in the North region and 8 sub-districts in the South region. With a topography like this, Kendal Regency is very suitable for food commodities, including rice plants. In 2020, the total area of rice plants in Kendal Regency is 9,341 hectares and the main rice harvest will take place in May.

The income of rice farmers and the use of labor in Kendal Regency during the Covid-19 pandemic has decreased. This can be seen from the processed data received from the Kendal Regency Agriculture Office (Table 3). Where the income received by rice farmers before the Covid-19 pandemic attack (2019) per hectare was IDR 29,040,000. After the Covid 19 pandemic in the same planting season, namely October and March 2020, farmers' income decreased to Rp. 21,340,000.

The decline in income was due to lower rice production. The decline in rice production was due to a decrease in the use of production inputs. The types of production input that are reduced on the use of: (i) inorganic Urea, NPK fertilizers, (ii) organic fertilizers are not used at all. This is due to disruption of the availability and use of organic fertilizers which will increase the workforce and (iii) reduce the use of pesticides and fungicides.

In addition to a decrease in input use, the use of labor outside the family also decreased during the Covid-19 period. In normal times, farmers trust rice cultivation more to workers from outside the family, which is 87%. After the Covid-19 outbreak, the percentage of outside the family workforce used has decreased to 69%. The wages for workers outside the family have not changed. Meanwhile, the wages for workers outside the family per day for women are Rp. 60,000 and the male labor wage is Rp. 80,000. Jobs that use female labor in the sections: nursery, planting, weeding and harvesting.

**Table 2: Employment Status in Indonesia, 2018-2020**

Status	Year			% Change	
	2018	2019	2020	2018-2019	2019-2020
Working age population	193,55	196,46	199,38	1,50	1,49
Labor/Work force	133,54	136,18	137,91	1,98	1,27
Active working	127,07	129,36	131,03	1,80	1,29
	%	%	%	%	%
Open unemployment rate	5,13	5,01	4,99	-0,12	-0,02
Urban	6,34	6,30	6,15	-0,04	-0,15
Rural	3,72	3,45	3,55	-0,27	0,10
Labor force participation rate	69,2	69,32	69,17	0,12	-0,15
Male	83,01	83,18	83,82	0,17	0,64
Female	55,44	55,5	54,56	0,06	-0,94
Serapan tenaga kerja di sektor pertanian	30,46	29,46	29,04	1,00	-0,42

Source: Purwantini. et.al 2020

**Table 3: Analysis of Rice Farming per Hectare in Kendal Regency**

Uraian	Before Covid-19 (2019)			In time of Covid-19 (2020)		
	Family	Non family	Nominal	Family	Non family	Nominal
Pra-harvest labor:	11	96	7.960.000	18	57	5.580.000
Nursery	1	4	300.000	3	2	300.000
Tractor	-	-	900.000	-	-	960.000
Hoe	2	10	960.000	4	6	800.000
Planting	2	35	2.220.000	3	25	1.680.000
Cultivating	2	8	800.000	4	4	640.000
Weeding	3	30	1.980.000	2	16	960.000
Spraying	1	9	800.000	3	-	240.000
Post-harvest labor:	10	47	4.020.000	18	26	3.080.000
Harvesting	2	25	1.620.000	4	18	1.320.000
Threshing	2	4	480.000	3	2	400.000
Cleaning	2	4	480.000	3	2	400.000
Transporting	-	8	640.000	4	2	480.000
Drying	2	4	480.000	2	2	320.000
Storage	2	2	320.000	2	-	160.000
<b>Total</b>	<b>21</b>	<b>143</b>	<b>11.980.000</b>	<b>36</b>	<b>83</b>	<b>8.660.000</b>
Production Means:	Fisik		Nominal	Fisik		Nominal
Seed	25		275.000	25		275.000
Urea Fertilizer	200		360.000	150		270.000
NPK/Phonska fertilizer	300		690.000	200		460.000
Organic TSP	1.500		900.000	-		-
Solid Pesticides	-		300.000	-		75.000
Liquid Pesticides	-		500.000	-		150.000
Fungicide	-		75.000	-		75.000
<b>Total</b>	<b>3.100.000</b>			<b>1.505.000</b>		
Other costs:	450.000			450.000		
Tax	150.000			150.000		
Irrigation	450.000			450.000		
<b>Total Cost</b>	<b>15.530.000</b>			<b>10.615.000</b>		
Production (kg)	6.600			4.850		
Gross income	29.040.000			21.340.000		
Nett inome	13.510.000			10.725.000		

Source : Kendal District Agriculture Office, data processed, 2020.

The decrease in the use of production inputs and the reduced use of labor outside the family is caused by: (i) the existence of a social restriction policy and there is a sense of fear from the farmers that they will be infected or exposed to the Covid-19 attack. (ii) decreased income due to limited space in seeking sources of family income. The use of fertilizers and pesticides relies more on the availability or residue from crop or rice cultivation in the previous season.

Table 4: Partial Analysis of Rice Cultivation Technology Budget Due to the Covid-19 Pandemic			
Profit Component		Losses Component	
Description	Value (Rp)	Description	Value (Rp)
Pra-harvest labor		Penurunan Pendapatan Kotor	7.700.000
Post-harvest labor	2.380.000		
Production facilities	1.595.000		
Amount	4.915.000		
Changing Profit - Lossess Rp. 4.915.000 - Rp 7.700.000 = Rp. -2.785.000			

Source : Kendal District Agriculture Office, data processed, 2020.

The reduced use of labor outside the family apart from saving family expenses is also due to the difficulty of finding farm laborers. Although it was reported that many urban workers returned to their villages, in reality these workers were not yet skilled in agricultural cultivation. What happens is that the workforce helps more family farming.

Even though there was a decrease in gross income of Rp. 7,700,000, based on a partial analysis of the rice farmers' budget in Kendal Regency, the net income decreased by Rp. 2,758,000. The reduction in losses in cultivation is due to a reduction or decreasing in costs: (i) pre-harvest labor worth Rp. 2,380,000, (ii) post-harvest labor worth Rp. 940,000 and (iii) purchasing production facilities worth Rp. 1,595,000 (Table 4).

#### 4. CONCLUSION

The GDP development in the business sector, especially food crops, did not experience a negative impact due to the Covid-19 attack. In the second quarter, the GDP of the food crop subsector business sector contributed the largest to the GDP of the agricultural sector. On the other hand, the absorption of labor in the agricultural sector has decreased by 0.42% compared to the absorption of labor in agriculture in 2019.

The decline in the use of labor outside the family was also experienced in rice cultivation in Kendal Regency. Before the Covid-19 pandemic attack, the use of labor outside the family was 87%. During the Covid-19 period, landowners increased their use of labor in the family and the use of outside labor decreased to 69%. The decline also occurred in production by 26%. This decrease was caused by a decrease in the adoption of cultivation technology by reducing the use of fertilizers and medicines.

During the Covid-19 pandemic, the income of rice farmers per ha decreased by Rp. 2,785,000. So that farmers do not experience losses, it is suggested that the government can help provide input production facilities that are distributed directly to farmers, and reduce crowds by increasing the availability and use of agricultural tools (mechanization).

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