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Rice Paddy Farming Performance, Rice Prices, and Food Inflation in Jambi Province

Kinerja Pertanian Padi Sawah, Harga Beras dan Inflasi Pangan di Provinsi Jambi

Zainuddin*
Program Studi Agribisnis, Universitas Batanghari, Indonesia
Jl. Slamet Riyadi-Broni, Jambi. 3622. Tel. +6274160103
*e-mail korespondensi: zai.doctorone@gmail.com

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ABSTRACT
Jambi Province's ability to produce rice has declined in the last 5 years (2018 to 2022). Changes in the ratio of rice prices to other commodities are likely to be the cause of land use for rice crops decreasing, especially tidal and rainfed land areas. The stagnation of irrigated rice fields, the quality of rice seeds, the allocation of subsidized fertilizers below the needs, is likely to be a factor in the low productivity of paddy rice yields in the 2018 to 2022 period. Jambi Province experienced an average deficit of 5596 tons per month in the 2018 to 2020 period, and 9537 tons per month in the 2021 to 2022 period. Rice prices at the rural consumer level in Jambi Province are relatively more stable with a slow increase. This is likely related to the less volatile interprovincial rice price transmission driven by the smooth distribution of rice and the impact of the government's market stabilization program. City food inflation in 2018 and 2019 was more stable within a low range. However, it became more volatile from 2020 to 2022. The increase in city food inflation generally occurs from the middle to the end of the year. Rice has the highest weight in the food price index used in calculating food inflation. The growing rice deficit in Jambi Province creates vulnerability in controlling food inflation, especially in urban areas. Higher food inflation is feared to threaten household purchasing power and food security.
Keywords: *Rice; Deficit; Price; Food Inflation; Performance*

ABSTRAK
Kemampuan Provinsi Jambi dalam menghasilkan beras menurun dalam 5 tahun terakhir (2018 – 2022). Perubahan rasio harga padi dengan komoditas lain kemungkinan menjadi penyebab penggunaan lahan untuk tanaman padi semakin menurun terutama areal lahan pasang surut dan tadah hujan. Stagnannya sawah irigasi, mutu benih padi, alokasi pupuk subsidi dibawah kebutuhan, kemungkinan menjadi faktor yang rendahnya produktivitas hasil panen padi sawah dalam periode 2018 – 2022. Provinsi Jambi mengalami defisit rata-rata sebesar 5596 ton per bulan dalam periode 2018 – 2020, dan sebesar 9537 ton per bulan dalam periode 2021 – 2022. Harga beras tingkat konsumen perdesaan di Provinsi Jambi relatif lebih stabil dengan kenaikan secara perlahan. Hal ini kemungkinan terkait dengan adanya transmisi harga beras antar provinsi yang kurang fluktuatif yang didorong oleh

lancarnya distribusi beras dan dampak dari program stabilisasi pasar oleh pemerintah. Inflasi pangan kota pada tahun 2018 dan 2019 lebih stabil dalam rentang yang rendah. Namun semakin fluktuatif pada tahun 2020 hingga 2022. Kenaikan inflasi pangan kota umumnya terjadi mulai pertengahan sampai akhir tahun. Beras memiliki bobot tertinggi dalam indeks harga pangan yang digunakan dalam perhitungan inflasi pangan. Defisit beras yang semakin besar di Provinsi Jambi menimbulkan kerawanan dalam pengendalian inflasi pangan terutama wilayah perkotaan. Inflasi pangan yang semakin tinggi dikhawatirkan mengancam dayabeli dan ketahanan pangan rumahtangga.
Kata kunci: *Beras; Defisit; Harga; Inflasi Pangan; Kinerja*

INTRODUCTION

The staple food for the population in Jambi Province is still dominantly sourced from rice. In the past 10-15 years, Jambi Province's ability to provide food (rice) was considered quite successful by mostly utilizing irrigated, rain-fed and tidal rice fields. The sustainability of food supply (rice) through production is highly dependent on the extent of the performance of rice farming from the highlands in Kerinci District and parts of Merangin to the lowlands and tidal areas in East Tanjung Jabung District. The success of rice production in previous decades has been very difficult to maintain to support food provision. Rice paddy production in Jambi province shows a declining trend in the 2018-2022 period. The area of irrigated rice fields in Jambi Province is slowly decreasing. In 2018 it still reached 33993 hectares but starting in 2019 it decreased to only 27715 hectares (BPS, 2024a). The decrease in irrigated rice fields in the 2018-2022 period has an influence on the performance of rice farming.

Irrigation development is suggested as a key strategy to increase agricultural productivity and boost economic development. Farmers with access to irrigation are in a better position to secure sufficient food than their counterparts. Irrigated farms perform better in crop production and productivity than rainfed farms. The damage to irrigation networks in Indonesia is quite large and the recent phenomenon of climate change has greatly affected the degradation of irrigation functions. On the other hand, the growth of food production (rice) is largely determined by the availability of irrigation water. Under these conditions, the role of the government becomes very important in order to realize adequate irrigation facilities (Purwantini & Suhaeti, 2017).

During the period January 2018 to December 2022 there was a decrease in rice harvest area by -1.06 percent, grain production (GKG) also decreased by -0.92 percent, and yield productivity increased by an average of 0.38 percent. In the previous case, rice production in Jambi province experienced a growth of 4.29 percent in the period 2010 to 2016. The increase in paddy rice production was driven by the growth of paddy rice harvest area by 1.23 percent in the period 2010 to 2016 and the growth of yield productivity by 1.35 percent in the same period (BPS Jambi, 2019). The decrease in rice harvest area is likely due to the limited area of irrigated rice fields in Jambi Province. Irrigated rice fields allow optimal agro-climatic conditions for rice plants, to increase yields, and the cropping index. Rainfed rice fields occupy the largest portion which is only planted once a year.

As a contributor to food inflation, rice is an important concern in the food consumption component of the population. The movement of rice price and supply determines food stability, which is usually reflected in the food inflation rate. The total supply of rice in Jambi Province comes from production and supply from outside the province and Bulog. Monthly rice production in Jambi Province fluctuates with a decreasing trend from the middle to the end of the year. On a monthly basis, when rice production is at a low point, it is always followed by a high spike in food inflation. An increase in food inflation often occurs every year after the harvest period from September to December. There is a downward trend in food inflation from the beginning to the middle of the year, after which there is an increase in food inflation from the middle to the end of the year. The average monthly food inflation in Jambi Province from 2018 to 2022 is 1.63 percent, while nationally it is 0.34 percent. Although the pattern of food inflation almost resembles the pattern of food inflation nationally, on average it is 5 times higher than national food inflation. Even in 2022, it reached 5.92 percent, much higher than the national average of 0.48 percent (BPS, 2024c). Rice is a component in calculating food inflation in addition to other commodities and is an important bundle of food expenditure. Therefore, its price should always be affordable to the people, especially the middle to lower class. The objectives of writing this scientific article are: 1) Describe the performance of wet-rice crops in Jambi Province for the period January 2018 to December 2022; 2) Analyze the trend of rice production and

consumption associated with the behavior of rice prices and food inflation in Jambi Province in the same period.

RESEARCH METHODS

Scope of Research

This study prioritizes the use of a descriptive analysis approach in explaining the performance of food crops (rice) in Jambi Province which includes the area of harvest, total rice production, the area of crop losses, the area of land cleared, and land planted with other crops from January 2018 to December 2022. The scope of the analysis also describes trends in rice production and consumption associated with the behavior of rice prices and food inflation in Jambi Province in the same period.

Data Source and Analysis Method

In this study, all of them used monthly time series data (times series) for the period January 2018 to December 2022 for all variables. Data sources come from the Jambi Province Central Bureau of Statistics and the Center and districts / cities through various types of publications. The data used is in aggregated form from all districts / cities in Jambi Province. In this study, descriptive data processing was carried out to describe the magnitude, tendency, or comparison of the research variables according to the data period.

RESULTS AND DISCUSSION

Food Crop Land Use in Jambi Province

The use of paddy fields for rice also competes with secondary crops such as corn, soybeans, sweet potatoes, and vegetables. In addition, there is still a large amount of land that is cleared or temporarily not planted with rice. Based on Figure 1, in the period January 2018 to December 2022 there was an increase in land temporarily cleared reaching an average of 0.92 percent and land use for other crops (non-rice) also increased by an average of 4.22 percent. This shift in food land use raises concerns about the sustainability of rice production as the staple food in Jambi Province. It is feared that the trend of land use for non-food crops will convert land into smallholder plantations such as oil palm and areca nut, especially tidal land, lebak rice fields, and rainfed rice fields. Farmers' decision to use food land for plantation crops may be related to changes in relative prices between agricultural commodities and the increasingly high price of fertilizers and the difficulty of water

for crops. This is feared to threaten food (rice) production and availability in the long run. The results of another study provide one recommendation to maintain the sustainability of food (rice) availability in the Special Region of Yogyakarta is to prohibit the conversion of food land to non-food land (Viana et al, 2024).

Based on Figure 2, there was a downward trend in grain production (GKG) in Jambi Province in the period January 2018 to December 2022. The decline reached an average of -0.92 percent per month or -10.86 percent per year. The decline in grain production was due to a decrease in the harvest area by an average of -1.06 percent per month or -12.54 percent per year. Based on the pattern of data throughout the year, it shows that the area of harvest and grain production move following the same pattern from the beginning of the year (January) to the end of the year (December). January and February show relatively high harvest areas and grain production. The peak of harvest and grain production occurs in March and April which is also the first harvest period. The trend of harvest area and grain production decreases in the following months until the second harvest period. In 2018, 2019 and 2020, the second harvest period occurred in July and August each year.

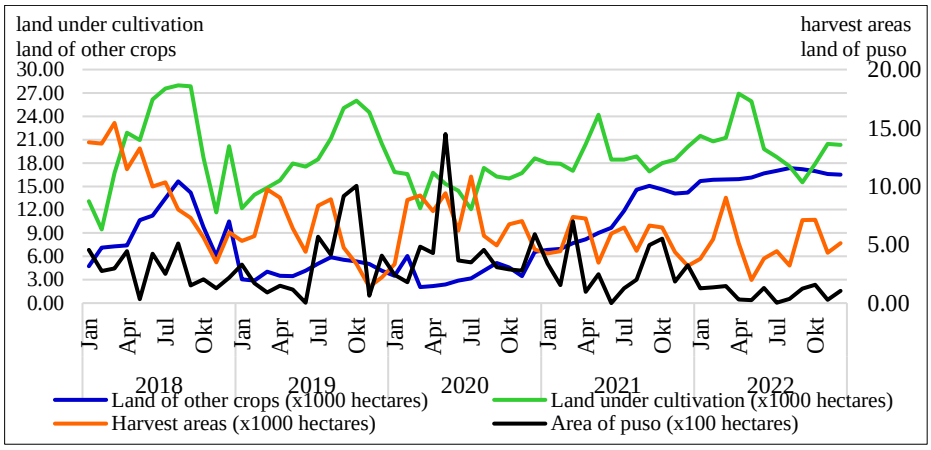

Figure 1. Harvest area, area of puso, land of other crops and land under cultivation in Jambi Province (Jan 2018 to Dec 2022)
Source: Central Bureau of Statistics, various publications (2024).

Most paddy rice farmers after the first harvest period immediately plant rice in May to June. In 2021 and 2022, there was a shift in the pattern of rice planting, namely starting planting in July - August, so that there was also a shift in the second harvest period in September to October. A possible cause of the shift in the planting

pattern of the second half of the season in 2021 and 2022 is the high rainfall after the first harvest period. Lebak or rainfed rice fields, which are generally around river areas, are disturbed by floods that inundate rice fields, as well as upland rice fields are also disturbed by excessive waterlogging. The decrease in rainfall intensity from July to August was utilized by farmers to start the planting season in the second half.

The ability of farmers to increase the productivity of paddy fields is an important concern in increasing grain production in Jambi province. According to the data in Figure 2, in the period January 218 to December 2022, the productivity of paddy fields was only in the range of 42 - 48 quintals per hectare (GKG) and on average grew by 0.38 percent per month or 4.50 percent per year. The rice productivity achieved is still below the national figure of 51.72 quintals per hectare (GKG).

The low productivity of rice is likely related to the relatively low allocation of inputs (especially seeds and fertilizers). The allocation of inputs that is still far from the optimal level will result in a production level that is also below optimal per unit area of land, so it can be seen from the achievement of rice yields (productivity) in the period (2018 to 2022) still in the average range of 42 to 48 quintals per hectare (GKG). Most wetland rice farmers in Jambi province still use inbred rice seeds which are characterized by lower yield potential compared to hybrid rice seeds. Examples of inhib hybrid rice seedlings are the inpari variety for irrigated and rainfed rice fields, while the inpara variety for lebak and tidal swamp rice fields. 80.70 percent of rice paddy households in Jambi Province use inhib hybrid rice seeds and 19.30 percent use hybrid seeds (BPS, 2024a). The potential types of land available (rainfed, lebak, tidal) in several central districts in Jambi Province require the suitability of rice and other food varieties lainnya (Zainuddin, 2021). Biological technology improvement through the use of superior varieties is one of the efforts to increase the productivity of paddy rice in Jambi Province. The results of another study showed that paddy fields in Muaro Jambi had higher yield productivity when using Ciherang and Inpara 3 superior seeds compared to local seeds (Adistya & Aryani, 2023).

Rice paddy farmers in Jambi Province who did not receive fertilizer assistance reached 55.85 percent, received subsidized fertilizer 27.96 percent, and

received free fertilizer assistance 16.19 percent. This fact shows the large percentage of wet-rice households that did not receive fertilizer assistance. It is very worrying that the group of farmers did not fertilize or fertilize the rice paddy plants that they manage. Rice paddy farmers should be supported by the provision of subsidized fertilizer to meet the nutrition of rice plants because the price is still affordable by farmers. However, the allocation of subsidized fertilizer in Jambi Province is also so low that it can only serve rice farmers by 27.96 percent in 2022. This compares to neighboring provinces that have relatively higher allocations, namely South Sumatra 55.22 percent, West Sumatra 59.94 percent, and Bengkulu 61.83 percent (BPS, 2024a). Consideration of the importance of increasing the provision of fertilizers for paddy rice is reinforced by the results of previous studies (Sari et al, 2019; Amelia et al, 2022; Sukmayanto et al, 2022).

The slow increase in productivity of paddy rice is likely related to the quality of paddy fields. More than half of the rice fields in Jambi province are still rainfed, followed by irrigated rice fields, tidal swamp rice fields and lebak. Rice paddy farmers in Jambi province manage only 37.86 percent of irrigated paddy fields, 51.43 percent of rainfed paddy fields, 9.98 percent of tidal swamp fields, and 0.74 percent of lebak swamp fields (BPS, 2024a). Limited irrigated rice fields make it difficult to increase crop productivity and the planting index from the usual 1 time to 2 times or 3 times. This difficulty is the main obstacle in increasing grain production in Jambi Province.

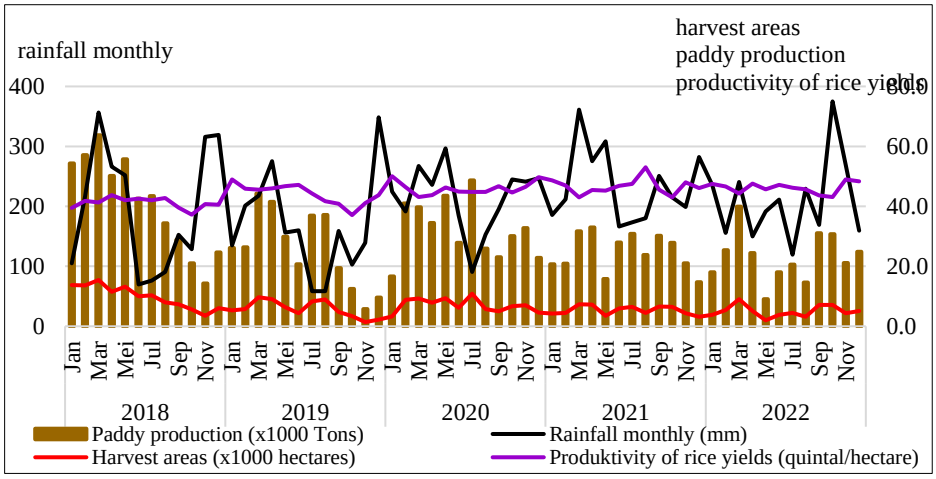

Figure 2. Harvest area, paddy production, productivity of rice yields, and rainfall
Source: Central Bureau of Statistics, various publications, BMKG Jambi (2024)

Irrigated land is suggested as a key strategy to increase agricultural productivity and promote economic development (Dawit & Balta, 2015). Irrigation for the purpose of food production and overcoming rainfall shortages and helps stabilize agricultural production and productivity (FAO, 2012). Irigated land has implications for improving rice farming performance, food availability, farmer income, food consumption, and food security (Oktiani & Khoirunurrofik, 2024; Anugrah et al, 2024).

Rice Production and Consumption in Jambi Province

As shown in Figure 3, in the period January 2018 to December 2022 there was a decrease in rice production in Jambi Province by an average of -0.01 percent per month or -0.12 percent per year. The average rice production per month in 2018 was 18370 tons and decreased in 2022 by 13389 tons. In general, the rice harvest in Jambi Province occurs in February to March and July to August every year unless there is a shift in the rice planting season due to high rainfall or drought. However, some rice farmers also plant after the first harvest season and generally harvest rice in late July to August. In 2021 and 2022 there was a shift in the second planting season so that the rice harvest period shifted to September to October. This shift in the planting season is due to the impact of climate change (such as reduced rainfall and increased temperatures), which results in a later arrival of the rainy season and a longer dry season so that rice farmers delay the planting season. This is in line with the shift in the rice planting season due to climate change in Batanghari District, Jambi Province (Nasution, 2023).

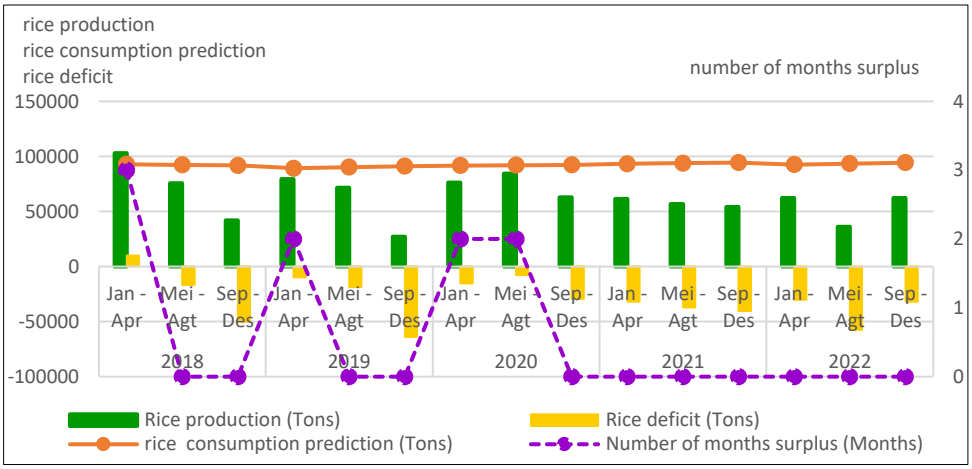

Figure 3. Rice production, gap in rice production and consumption and number of surplus months in Jambi Province (period Jan 2018 to Dec 2022)
Source: Central Bureau of Statistics, various publications (2024)

The prediction of rice consumption in Jambi Province in the period January 2018 to December 2022 uses the approach of consumption expenditure data of

Jambi residents in March and September from the Central Bureau of Statistics with Jambi mid-year population data. The results of the prediction of rice consumption in Jambi Province are shown in Figure 3.

The average monthly rice consumption in Jambi Province in 2018 was 21,861 tons, increasing to 22,346 tons in 2022. The balance of rice production and consumption in Jambi Province shows a decline (lower production than consumption) except in the period January to April 2018. The trend of rice production showed a decrease in the period January 2018 to December 2022, but the trend of rice consumption showed an increase every month. The increase in rice consumption during this period was dominated by population growth, rather than income and other factors. Population growth is still quite high, which in 2018 reached 1.57 percent and fell very slowly to 1.33 percent in 2022 (BPS Jambi, 2024). If production is subtracted from consumption in each month, the number of months of rice surplus or rice deficit in Jambi Province is obtained.

In Figure 3, the number of months of rice surplus is only 3 months in early 2018, 2 months in early 2019, and 4 months in 2020. In the following year, there are no more months of rice surplus. The food supply (rice) derived from production capability is decreasing in the analysis period. The Jambi provincial government needs to take policies in the short term to increase the productivity of paddy fields, maintain irrigation networks, and in the medium term to increase irrigated rice fields and build reservoirs so that the performance of rice farming is higher to support food supply. This is in accordance with other studies that increasing rice production can be achieved by improving productivity through optimal input allocation, increasing planting areas and new rice fields and restraining land conversion (Wajdah et al, 2024).

Decline in Rice Production, Food Prices, and Inflation in Jambi Province

The decline in rice production in Jambi Province averaged -0.01 percent per month or -0.12 percent per year, while its consumption experienced an increasing trend in accordance with the increase in population, resulting in a deficit in production capacity in providing rice for consumption.

As shown in Figure 4, from 2018 to 2020, Jambi Province was still able to achieve a surplus of rice production (when measured by production minus consumption), namely during the first harvest period (February, March to April)

and the second harvest period (July to August). The average rice deficit per month in Jambi Province in the period 2018 to 2020 reached 5596 tons. In other months outside the main harvest, there was a deficit. Deficit conditions occur every month from 2021 to 2022. The average rice deficit per month is getting bigger, namely 9537 tons in the period 2021 to 2022.

Despite the rice deficit in the period 2018 to 2022, the price of medium rice in rural areas increased only very slowly and did not fluctuate. On average, the price of medium rice at the rural consumer level increased by 0.20 percent per month or 2.35 percent per year during this period. This very slow increasing behavior of rice prices is influenced by the supply of rice from outside the province, especially from Lampung, South Sumatra, West Sumatra, West Java, and Central Java (BPS, 2024b).

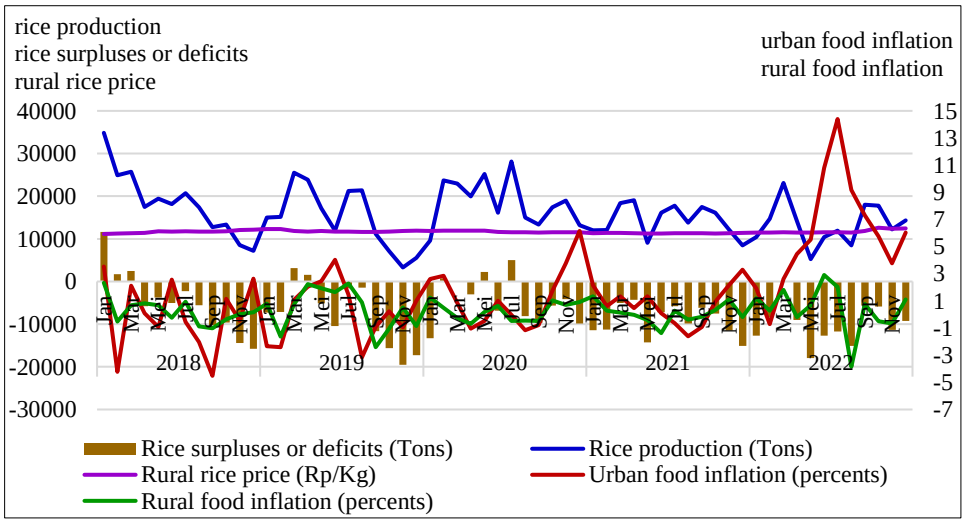

Figure 4. Rice production - consumption gap, rice price, urban and rural food inflation in Jambi Province (Jan 2018 to Dec 2022)
Source: Central Bureau of Statistics, 2024 (various publications).

The supply of rice from producers outside the province goes through a longer chain of distributors, subdistributors, retailers, and final consumers. The supply of rice from outside the province strengthens the supply of rice in Jambi Province during non-harvest months. The shorter rice chain comes from rice producers (millers) in several districts to wholesalers to final consumers. Some rice production in Jambi Province is also distributed to neighboring provinces such as Riau, West Sumatra, and South Sumatra, especially in border areas (BPS, 2024b). To stabilize rice prices, Bulog Jambi Region conducted market operations reaching

an average volume of 2571 tons per month in the period 2018 to 2021 (Asmaida & Suryadi, 2023). The impact of the market operation may have contributed to the behavior of slowly rising rice prices.

Food inflation is influenced by the food price index (IPH). The Central Bureau of Statistics includes 20 commodities in the IPH calculation, namely rice, broiler chicken meat, eggs, shallots, red chili, cayenne pepper, cooking oil, sugar, garlic, beef, wheat flour, bananas, oranges, etc. Commodities with the largest weights are rice 28.50 percent, broiler chicken meat 10.14 percent, and eggs 7.86 percent. The weight of rice is still relatively high due to consideration of the pattern of household consumption expenditure in Indonesia is still quite large for the type of staple food (rice). Therefore, the increase in rice prices has a large influence on the increase in food inflation. As Figure 4 shows, food inflation fluctuates further from 2020 to 2022. In 2018 and 2019, it is more stable in urban areas with a low range. However, in 2020 to 2022, it shows higher fluctuations in the middle to the end of the year. The growing rice deficit in Jambi Province in the period 2018 to 2022 is likely related to food inflation in urban areas that shows increasing fluctuations until the end of the period. Concerns about uncontrolled food inflation affect the purchasing power of staple foods by households in Jambi Province. Declining food purchasing power will worsen the condition of food security, and the next stage is not impossible to increase the number of food insecurity.

CONCLUSION

In general, the performance of food agriculture, especially rice in Jambi Province, decreased in the 2018-2022 period. The harvest area and production of paddy rice decreased. The productivity of paddy rice yields only increased slowly in the 2018-2022 period, and the productivity was below the national average. The low productivity is likely due to limited irrigated paddy fields, inhibrida-dominated seeds, and low allocation of subsidized fertilizers.

Jambi Province experiences an average rice deficit of 5596 tons per month in the period 2018 to 2020, and 9537 tons per month in the period 2021 to 2022. Rice supply shortages are supplied from neighboring provinces. Rice prices at the rural consumer level are relatively stable with a slow increase, possibly due to less

volatile prices between provinces due to better supply chains and market stabilization.

Food inflation in urban areas at the beginning of the period, i.e. 2018 and 2019, showed stability in the low range. However, it increases at the end of the period, from 2020 to 2022. The increase in food inflation in urban areas generally occurs in the middle to the end of the year. Rice has the highest weight in the food price index (CPI) in calculating food inflation. The growing rice deficit creates vulnerabilities in controlling food inflation, especially in urban areas in Jambi Province. Urban food inflation with an upward trend is also feared to threaten people's purchasing power in fulfilling food consumption, which in turn has the potential to reduce the level of food security.

The policy implication in the short term is to increase the productivity of the wet-rice harvest by maintaining the irrigation network so that water is available for rice plants, improving the quality of seeds, and increasing the allocation of subsidized fertilizers. In the medium term, it can be pursued by the development of small-medium irrigation systems that utilize surface and subsurface water, to provide water for rain-fed rice fields with the largest area. It is suggested to the Jambi Provincial government, to improve the program on the effectiveness of the use of irrigation infrastructure, the accuracy of the use of subsidized fertilizers to rice farmers, and the periodic recording of crop yields achieved by farmers. The effectiveness of the program should be supported by the functioning of farmer groups and farmer group associations (Gapoktan).

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