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Research Paper

Agricultural Performance and Its Potential Role Amid Manufacturing Industry Contraction and Employment Challenges in Solo Raya

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Abstract

The manufacturing industry in the Solo Raya region experienced a decline this year due to the closure of several large industries. This situation has not only caused changes in the socio-economic conditions of the community but also affected several other sectors, including agriculture. This study aims to analyze trends in the agricultural sector due to the closure of manufacturing industries in Solo Raya. The approach used in this research is descriptive, qualitative, and analyzes secondary data. Data collection methods include literature studies, observations, and interviews. The data shows that the manufacturing sector still dominates the GRDP in Solo Raya District compared to the agricultural sector. The rate of workers in the industrial sector has begun to decrease due to the closure of several large-scale industries, while the rate of workers in the agricultural sector remains dominant. However, the agricultural sector is not fully capable of being the alternative for workers affected by mass lay-offs because agricultural products cannot replace the manufacturing sector as the largest contributor to GRDP. Furthermore, the agricultural sector is also not the primary choice for workers who are laid off from the manufacturing sector.

Keywords *Agricultural Sector, GRDP, Manufacturing Industry*

INTRODUCTION

Manufacturing is crucial to the economic growth of Central Java and the nation. According to the quarterly distribution of regional GRDP at current prices by industrial sector, manufacturing, which contributes 18.67% to GDP, holds significant importance, particularly as textiles and garments are key industries in the Solo Raya region (BPS Provinsi Jawa Tengah, 2024). Hanifah and Yasin (2024) argue that deindustrialization and the declining contribution of secondary industries to GDP are key factors in Indonesia's economic crisis, a trend that is also evident in the Solo Raya region. The labor-intensive textile and apparel industry, a key pillar of Solo Raya's manufacturing sector, experienced significant setbacks between 2024 and 2025, as the post-COVID-19 decline in manufacturing was further exacerbated by the influx of foreign goods and unfavorable policy environments.

The closing of factories and mass layoffs have caused socio-economic turmoil, hurting workers' households and the MSMEs surrounding them. Sritex (Sukoharjo), the Kusuma Group (Karanganyar)—notably PT Kusumahadi Santosa—and Delta Merlin have closed. These manufacturing firms in Solo Raya have closed, resulting in job losses, disruptions to household

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income, the MSME value chain, and local fiscal capacity, as well as social instability. Solo Raya's formal industries, particularly textiles and clothing, have declined, causing rapid unemployment. Revitalizing the agricultural sector could serve as a strategic response to this challenge, as agriculture has historically acted as a buffer, absorbing the decline of failing enterprises.

In Central Java, where agriculture remains a dominant foundation of the economy, the sector has reemerged as a crucial buffer against industrial decline. Following widespread deindustrialization, particularly the closure of major textile and garment factories, which has intensified unemployment, agriculture has become a critical alternative source of livelihood. In Solo Raya, this sector not only provides the second-largest contribution to regional GDP but also functions as a stabilizing force amid mass layoffs and industrial shutdowns. As many developing countries struggle to transition from agriculture to labor-intensive manufacturing (Grabowski & Self, 2020), the case of Solo Raya illustrates how agricultural resilience can mitigate the adverse effects of deindustrialization. This study, therefore, analyzes agricultural trends in relation to industrial closures and mass layoffs.

LITERATURE REVIEW

Leading sectors significantly influence regional economic development, particularly in terms of employment creation (Gatari et al., 2024). Leading sectors are intrinsically linked to GRDP statistics, with varying contributions across different geographical regions. Sectoral transformation occurs as a result of shifts in sectoral contributions, which arise from regional economic bases evolving through processes of sectoral restructuring. According to Wati et al. (2015), the Lewis two-sector model describes how developing countries transition from a subsistence agricultural economy to a modern, urban economy with a more diverse manufacturing industry and a stronger service sector. Changes in regional GRDP sectors usually accompany the move from a traditional to a contemporary economy. Besides physical changes, sectoral transformation includes changes in habits and economic production methods. When a region has a leading industry, local governments must create economic development strategies through growth-potential sectors (Hakim, 2019).

Rising household earnings increase demand for non-food items, shifting from primary to secondary and tertiary goods. However, secondary sector structural movements may also occur back to the primary sector. According to Hanifah and Yasin (2024), structural transformation is the redistribution of economic activities among three sectors—agriculture (primary), industry (secondary), and services (tertiary)—that advances modern economies. Local demand for primary goods may affect the primary sector, notably agriculture, as the secondary sector shifts (Padatuan et al., 2022). Due to its importance in workforce absorption, agriculture has the highest regional growth component (Rahayu & Setyowati, 2016). This industry has specialization, a competitive advantage in job generation, and can boost job creation in other sectors. Silvya et al. (2019) note that labor absorption, capital accumulation, and technical innovation allow leading industries to grow faster than other sectors in an area.

RESEARCH METHOD

This descriptive qualitative study used secondary data. Descriptive research examines contemporary issues in a population using visible data (Indriantoro & Supono, 2012). Qualitative research uses naturalistic methods to explain research respondents' behaviors, perspectives, motives, and actions in words and language (Moleong, 2017). The research presents facts, trends, and developmental dynamics based on statistical data and government reports, making this technique particularly suitable.

This analysis relies exclusively on government agency sources and published secondary data, which are considered reliable and effective for macroeconomic research. The Local

Departments of Agriculture and Manpower provide annual reports, the Central Bureau of Statistics (BPS) supplies macroeconomic and labor data, and the *Kabupaten/Kota dalam Angka* (Regency/City in Figures) series offers regional statistics for Boyolali, Sukoharjo, Karanganyar, Wonogiri, Klaten, and Surakarta. These data were further contextualized through field observations and interviews.

The investigation employed multiple analytical approaches, beginning with trend (time-series) analysis to track agricultural labor participation, followed by a comparative assessment of agricultural and industrial contributions to GRDP within the research area. This analysis compared inter-sectoral movements and sector contributions to regional economic growth (Todaro & Smith, 2015).

FINDINGS AND DISCUSSION

Employment Conditions and the Manufacturing Industry

The number of medium and large-scale industries in Solo Raya has remained stable. Employment has fluctuated, especially between 2019 and 2020. COVID-19-related layoffs drove this reduction in employment. By 2021, the industry rehired people and expanded, increasing employment in all districts and towns.

Table 1. Number of Workers in Medium and Large Industries in Regencies/Municipalities of Solo Raya, 2019–2022 (Persons)

No	Regencies / Municipalities	2019	2020	2021	2022
1	Boyolali	71.669	58.009	66.234	66.316
2	Klaten	28.376	26.982	47.791	55.738
3	Sukoharjo	68.577	61.189	81.397	87.927
4	Wonogiri	12.735	12.321	23.927	24.874
5	Karanganyar	66.568	54.109	62.053	68.343
6	Sragen	24.340	23.330	40.967	48.924
7	Surakarta	15.314	13.224	10.450	13.859

Source: Department of Industry and Trade of Central Java Province (processed)

According to the table above, Sukoharjo Regency has the most workers and Surakarta City has the fewest. With 700 medium and large-scale industries, Surakarta City uses little industrial labor. According to Dong (2022), many industrial zones are concentrated in suburban areas, where national growth strategies, regional autonomy in land acquisition and development, suburban land management, and the accelerated transition of post-suburban spaces toward structured development patterns play a crucial role (Anwar & Hidayati, 2023). Industry is concentrated in Solo Raya's Sukoharjo, Karanganyar, Boyolali, and Sragen Regencies. A significant number of manufacturing workers have relocated to Sukoharjo Regency, home to Southeast Asia's largest textile industry, yet with the bankruptcy and closure of this major company in early 2025, the sector has stagnated, as media reports indicate that at least ten large manufacturing firms, primarily textile companies employing over 100 workers, shut down across Solo Raya between 2024 and early 2025.

According to the Report on the Development of the Industrial Production Index for Medium and Large production in Central Java Province, 2022–2024, textile production is also declining. The 2024 index stood at 54.32, representing a 23.25% decline from 70.77 in 2023, with monthly graphs showing a consistent downward trend, while corporate insolvencies triggered mass layoffs that exacerbated unemployment (Mulyono & PN, 2025). According to Statistics Indonesia, Solo Raya's

open unemployment rate (TPT) has declined over the past five years to a level below the Central Java average, although Surakarta City continues to record higher unemployment than its surrounding regencies.

Table 2. Open Unemployment Rate (OUR) in Regencies/Municipalities of Solo Raya and Central Java Province, 2020–2024 (%)

No	Regencies / Municipalities	2020	2021	2022	2023	2024
1	Boyolali	5,28	5,09	4,92	4,05	3,16
2	Klaten	5,46	5,48	4,31	4,20	3,97
3	Sukoharjo	6,93	3,32	2,47	3,40	3,65
4	Wonogiri	4,27	2,43	1,95	1,92	2,40
5	Karanganyar	5,96	5,89	5,70	4,35	3,47
6	Sragen	4,75	4,76	4,69	3,87	3,53
7	Surakarta	7,92	7,85	5,83	4,58	4,61
8	Jawa Tengah	6,48	5,95	5,57	5,13	4,78

Source: BPS Kabupaten Boyolali (2025), BPS Kabupaten Karanganyar (2025), BPS Kabupaten Klaten (2025), BPS Kabupaten Sragen (2025), BPS Kabupaten Sukoharjo (2025), BPS Kabupaten Wonogiri (2025), BPS Kabupaten Surakarta (2025), processed

The number of productive-age unemployed individuals in Solo Raya has fluctuated over the past eight years, with a sharp increase of approximately 90,000 recorded in 2020. The COVID-19 outbreak caused widespread layoffs in practically all sectors. While unemployment may drop by 2024, the closure of numerous significant industries in Solo Raya is likely to elevate it again. Rosaline (2025) reports that significant Sukoharjo Regency industries laid off 11,025 people by February 2025. With the closure of Karanganyar Regency's industries, this figure may rise.

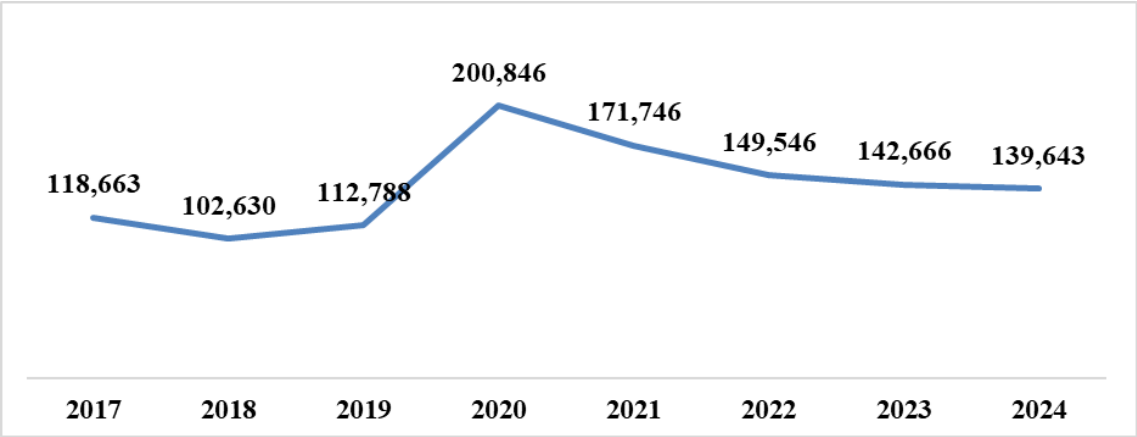

Figure 1. Number of Unemployed Persons in Solo Raya, 2017–2024 (persons)

Source: BPS Kabupaten Boyolali (2025), BPS Kabupaten Karanganyar (2025), BPS Kabupaten Klaten (2025), BPS Kabupaten Sragen (2025), BPS Kabupaten Sukoharjo (2025), BPS Kabupaten Wonogiri (2025), BPS Kabupaten Surakarta (2025), processed

Unemployment is expected to rise dramatically in 2025. Complex socio-economic issues are envisaged from this development. Harmen et al. (2024) highlight that layoffs cause income loss, financial misery, increased indebtedness, loss of social security, and psychological and emotional

harm that threatens quality of life and mental health.

Overview of the Agricultural Sector

The collapse of several Solo Raya manufacturing enterprises may lead to deindustrialization and a return to agriculture. Several regencies continue to depend on agriculture, which constitutes the main driver of regional growth and serves as a key absorber of labor in Solo Raya (Rahayu & Setyowati, 2016). The condition of the agricultural sector in a given region can at least be assessed through harvested area, production levels, and productivity of its major commodities.

Table 3. Harvested Area of Lowland Rice in Regencies/ Municipalities of Solo Raya from 2020–2024 (hectares)

No	Regencies / Municipalities	2020	2021	2022	2023	2024
1	Boyolali	49.191,36	51.215,06	51.555,00	50.261,49	50.261,49
2	Klaten	66.729,30	68.479,20	64.958,00	54.219,39	54.219,39
3	Sukoharjo	46.023,36	51.365,22	48.207,00	42.640,59	42.440,59
4	Wonogiri	63.141,93	68.866,78	67.439,00	54.913,68	54.913,68
5	Karanganyar	43.452,07	45.519,42	44.750,00	42.671,12	42.671,12
6	Sragen	108.953,93	112.183,00	113.183,00	116.959,16	73.281,63
7	Surakarta	39,44	33,03	27,00	28,44	28,44

Source: BPS Provinsi Jawa Tengah (2020, 2021, 2022, 2023, 2024), processed

The table above shows that Solo Raya's harvested rice area has declined over the previous five years; however, the decline varies among districts and municipalities. Agrarian districts like Wonogiri and Sragen still dominate harvested land, but they are shrinking. Agriculture is declining due to land conversion to non-agricultural purposes, especially housing and industrial zones that are expanding in peri-urban buffer areas like Sukoharjo and Karanganyar (Prasada & Masyhuri, 2019). Climate change, with its increasingly variable rainfall patterns, has altered planting schedules and irrigation water availability, resulting in reduced annual harvests (Auliya et al., 2024).

Agriculture remains crucial to food provision, especially given the manufacturing industry's slow performance, but cropland is shrinking. This could weaken agriculture as an alternative sector after widespread layoffs. Thus, while labor transitions from industry to agriculture are possible, Solo Raya's restricted harvested area makes agricultural optimization difficult. Solo Raya rice production fluctuates compared to the harvested area. Harvested area closely affects these oscillations. Despite steady productivity per hectare, the reduction in farmland lowers production.

Table 4 shows that Solo Raya's primary rice granaries, Sragen and Wonogiri, produce the most rice, while Surakarta City produces the least due to its limited agricultural acreage. Production declines with the harvested area, which in Solo Raya is primarily due to land-use conversion and decreases in the cropping index. Although productivity per hectare has remained consistent, the reduced harvested area has resulted in a decrease in total production (Perdinan et al., 2008). Climate variability and agricultural inputs significantly impact rice production beyond land-related issues. In 2023, rainfall variability and the El Niño anomaly led to lower planting success rates in Central Java (Dhamira & Irham, 2020). Rising input costs, such as fertilizers and insecticides, worsened farmers' financial situations.

Table 4. Rice Production in Solo Raya by Regencies/Municipality, 2020–2024 (tons)

No	Regency / Municipality	2020	2021	2022	2023	2024
1	Boyolali	236.823,50	292.823,71	302.311,00	278.957,00	279.953,50
2	Klaten	370.057,03	393.630,25	367.724,00	355.717,00	304.870,90
3	Sukoharjo	314.992,36	346.316,11	308.688,00	320.221,12	319.666,41
4	Wonogiri	352.816,11	403.436,08	380.055,00	376.817,05	289.707,60
5	Karanganyar	262.399,70	271.204,42	277.554,00	251.816,48	259.568,70
6	Sragen	723.671,68	763.292,86	683.496,00	641.060,25	565.356,00
7	Surakarta	243,74	241,94	156,00	160,90	163,78

Source: BPS Provinsi Jawa Tengah (2020, 2021, 2022, 2023, 2024), processed

Stagnant or declining production levels limit the agricultural sector's ability to absorb more labor. Solo Raya's rice productivity seems constant with slight changes; for instance, Klaten had an output of 55–57 quintals per hectare, while Boyolali had 55–58 quintals. Despite a decrease in harvested area, Sukoharjo productivity rose dramatically from 65.43 quintals per hectare in 2023 to 75.32 in 2024. This suggests input efficiency, technological adoption, or more adaptable high-yielding cultivars.

Table 5. Rice Paddy Productivity in Regencies/Municipalities of Solo Raya, 2020–2024 (kw/ha)

No	Regencies / Municipalities	2020	2021	2022	2023	2024
1	Boyolali	48,14	57,18	58,64	55,84	55,70
2	Klaten	55,46	57,48	56,61	54,95	56,23
3	Sukoharjo	68,44	67,43	63,48	65,43	75,32
4	Wonogiri	56,04	58,58	56,36	56,43	52,76
5	Karanganyar	60,39	59,58	62,02	59,87	60,83
6	Sragen	66,42	68,08	60,39	54,78	56,56
7	Surakarta	61,80	63,61	57,78	61,79	57,59

Source: BPS Provinsi Jawa Tengah (2020, 2021, 2022, 2023, 2024), processed

Despite less cultivated acreage, agricultural technological improvements, high-yielding varieties, and the *jajar legowo* planting strategy have helped farmers maintain harvest results (Susilowati, 2016). Despite persistent inter-district disparities, the consistency of agricultural engagement indicates that Solo Raya retains relatively strong agricultural personnel resources. Farmers can adopt contemporary farming methods despite economic pressures, such as increased input costs. The issue of farmer regeneration is important because younger workers are increasingly likely to work in non-agricultural fields.

Agricultural Trends Amid Manufacturing Industry Closures and Mass Layoffs

The closure of major manufacturing enterprises and massive layoffs have complicated Solo Raya's socio-economic dynamics. This circumstance raises important considerations about agriculture's role as a regional economic buffer and the reallocation of the workforce to the agricultural sector. Agriculture has historically protected non-agricultural industries from stress (Ellis, 2000; Tacoli, 2002). In the context of structural changes in regional economies, agriculture's absorptive potential may not match the growing demand for new jobs (Arsyad, 2019).

Agriculture affects land area, productivity, and GDP in Solo Raya. Despite its steady and

significant contribution in numerous districts, agriculture does not dominate GRDP. Manufacturing and agricultural GRDP contributions are compared in Table 6. From that, we know that the agricultural GRDP contributions of most Solo Raya regencies and municipalities are declining. Despite declining contributions, agricultural-based regencies such as Sragen, Wonogiri, and Boyolali continue to make significant contributions. In contrast, metropolitan areas such as Surakarta exhibit minimal and stagnant agricultural contributions, while manufacturing plays a comparatively larger role in the local economy. Although the manufacturing contribution in Sukoharjo Regency has declined marginally, the impact is significant, given its longstanding role as a labor absorber from neighboring regencies.

Table 6. Comparison of the Contribution of Agricultural and Manufacturing Sectors to the GRDP of Regencies/Municipalities in Solo Raya, 2020–2024 (%)

No	Regencies/ Municipalities	2020	2020	2021	2021	2022	2022	2023	2023	2024	2024
		P	IM	P	IM	P	IM	P	IM	P	IM
1	Sukoharjo	8,75	39,1	8,65	38,98	8,31	38,74	8,3	38,32	8,14	38,15
2	Sragen	15,1	37,7	14,61	38,35	14,07	38,89	13,96	39,58	13,39	39,76
3	Wonogiri	30,1	17,55	29,38	18,13	29,11	18,08	28,2	18,61	27,19	19,25
4	Klaten	10,9	37,39	10,45	37,72	10,09	37,34	9,83	37,93	9,36	38,55
5	Karanganyar	13,3	46,71	13,03	46,86	12,65	46,3	12,1	46,61	11,76	46,97
6	Boyolali	22,5	30,13	22,15	30,64	21,1	30,02	20,6	30,58	20,53	31,48
7	Surakarta	0,51	8,44	0,5	8,66	0,48	8,59	0,5	8,54	0,44	8,56

Note: P = Agriculture; IM = Manufacturing Industry

Source: BPS Kabupaten Boyolali (2025), BPS Kabupaten Karanganyar (2025), BPS Kabupaten Klaten (2025), BPS Kabupaten Sragen (2025), BPS Kabupaten Sukoharjo (2025), BPS Kabupaten Wonogiri (2025), BPS Kabupaten Surakarta (2025), processed

Manufacturing absorbs the second-most labor after agriculture. Central Java Province employed approximately 4.3 million people in manufacturing in 2024. The processing industry boosts economic growth by creating jobs, generating business opportunities, and stimulating related sectors. Several studies have found that manufacturing industries diversify livelihoods and raise household incomes (Nawawi et al., 2015; Firmansyah, 2020; Bahris, 2024).

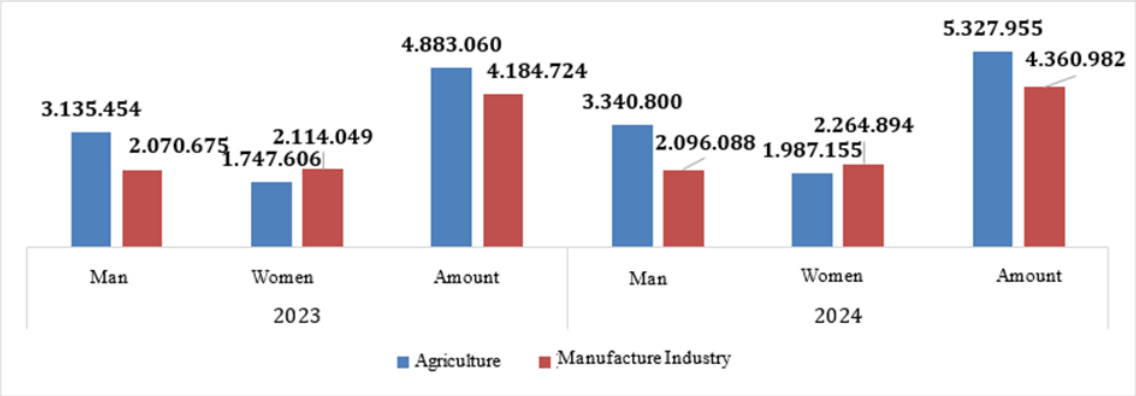

Figure 2. Number of Workers in the Agricultural Sector and Manufacturing Industry in Central Java, 2023 and 2024 (Persons)

Source: BPS Provinsi Jawa Tengah (2023, 2024), processed

This indicates regional structural economic transformation, in which the secondary (industry) and tertiary (services) sectors dominate while the primary sector (agriculture) declines (Todaro & Smith, 2010). This drop in contribution may be due to the rapid rise of other sectors that modify agriculture's relative position. In Solo Raya, the agricultural sector's contribution has dropped, but it remains considerable, especially given the manufacturing layoffs that triggered the job crisis. For individuals returning to rural areas or those who have lost modern jobs, agriculture offers informal employment opportunities (Arsyad, 2019).

Even if industry and services are replacing agriculture in the regional economy, it remains a socio-economic safety net. Indonesia's history demonstrates that agriculture provides employment when the formal economy is struggling. This is conceivable because some regencies in Central Java still have vast expanses of agricultural land, many rural people possess basic farming skills, and food demand remains consistent. The agricultural sector employs a large number of people directly (in rice fields, plantations, and cattle farming) and indirectly (through processing, distribution, and local trade). Farming provides an alternative to industry salaries, but it does not replace them. Vegetables can save family costs, and surplus harvests can be sold in traditional marketplaces. As survival techniques, some households start small-scale food processing businesses, such as producing cassava chips, tempeh, or dairy products.

According to several studies, when metropolitan or peri-urban residents lose formal manufacturing jobs, agriculture is often the last resort (Sudaryanto et al., 2021; Susilowati, 2016). The harvested area represents the land capacity, which affects food production and regional food security (FAO, 2017). As older age groups dominate and younger generations lose interest in agriculture, the labor force remains weak. Despite a steady agricultural land area, Oktafiani (2020) reports a decline in agricultural employment worldwide, as well as in Asia. Saraswati's (2025) study indicated that rural kids quit agriculture after graduating to work in non-agricultural fields. Thus, elder generations dominate agriculture as regeneration slows. Another concern is that laid-off workers and communities affected by industrial closures are reluctant to enter agriculture. Many are unwilling to farm in their hometowns. Rozci (2023) attributes diminishing interest in agriculture to unfavorable attitudes of farming, urbanization, modernization, resource scarcity, economic communication, education, and social and cultural changes. High risks, lack of security, inconsistent and discontinuous income, and the lack of young farmer incentive policies contribute to these difficulties (Susilowati, 2016).

Solo Raya, which faces pressures from declining industrial labor absorption, can use the harvested area to determine if there is a re-intensification of the agrarian sector or a downward trend driven by urbanization and industrialization. Mass layoffs may motivate people to return to agriculture, but land capacity is limited. Increased production and farmland protection are needed to make agriculture resilient to economic pressures. The biggest obstacles to establishing agriculture as an alternative sector are:

1. The conversion of agricultural land into housing, industrial estates, and infrastructure developments is common in Sukoharjo, Karanganyar, and Klaten. Farmland is diminishing, affecting local food security.
2. Solo Raya market competition from exterior agricultural items. Low branding and processed product innovation hurt local commodities in modern marketplaces.
3. Limited opportunities for funding and finance for agricultural enterprises. KUR (People's Business Credit) has not yet reached the majority of smallholder farmers, who often lack access to capital.
4. Seasonal and climate influences in dryland regions like Wonogiri. Water availability affects harvests, causing supply instability.
5. Traditional approaches reduce productivity. There is little access to mechanization, new

seed varieties, and ecologically acceptable fertilizers.

CONCLUSIONS

Agriculture in Solo Raya faces mounting challenges, as land conversion, climate-related stresses, and limited production facilities have contributed to declining rice output and shrinking harvested areas. However, productivity is stable or rising in several regions, reflecting the innovative capacity and uptake of technology. As other sectors rise, agriculture's contribution to GRDP is reduced, but its position as a labor absorber remains crucial, especially when the industrial sector declines. These limitations prevent Solo Raya agriculture from becoming the only option for mass lay-off workers. The biggest problem is using agriculture's capacity to provide food and absorb new jobs as manufacturing industries close. Sustainable farmland preservation legislation, ecologically friendly technology, and diversification of farming enterprises to increase farmer value are necessary to achieve this goal.

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