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PERFORMANCE ANALYSIS OF FOOD CROP, HORTICULTURE AND PLANTATION SUB-SECTORS IN AGRICULTURAL CENTERS ON JAVA ISLAND

Rif'an Hariri
[1]Agribusiness Study Program, Faculty of Agriculture, KH. A. Wahab Hasbullah University

Corresponding email: rifan@unwaha.ac.id

ABSTRACT
The food crops, horticulture, and plantation sub-sectors are the pillars of the regional economy. In recent years, there has been a problem in the form of a slowdown in the GRDP growth rate in these three sectors, requiring an evaluation of their performance. This study uses data from the Provincial Statistics Agency (BPS) and the Esteban Marquillash Shift Share method. The results obtained indicate that the performance of the food crops and horticulture sub-sectors requires improvement, while the performance of the plantation sub-sector can be considered good. The food crops and horticulture sub-sectors can survive more due to geographical factors. The implication of this study is that local policymakers need to pay special attention to the food crops and horticulture sub-sectors because their performance has been proven to be less than satisfactory. The contribution of this research is to enrich scientific studies related to the agricultural sector, especially food crops, horticulture, and plantations.

Keywords : Food, horticulture, plantations

INTRODUCTION

Java is known as the foundation of food security in Indonesia, hence the proverb "gemah ripah loh jinawi" (gemah ripah: vast territory, loh jinawi: fertile land). This proverb deserves further study, as the agricultural sector, particularly food crops, faces threats from various aspects. Land degradation, declining soil fertility, weather anomalies, and workforce transformation are real threats that are increasingly widespread. These threats not only impact the economic sector but also jeopardize Indonesia's reputation as a food crop producer.

The Regional Gross Domestic Product (GRDP) of the agriculture, livestock, hunting, and agricultural services sectors on Java Island from 2021 to 2025 has shown an increase; however, this growth remains far below that of the manufacturing sector. The contribution of the GRDP for the agriculture, livestock, hunting, and agricultural services sectors in East Java Province from 2021 to 2025 ranges from 1.15% to 5.74% (BPS Provinsi Jawa Timur, 2026). The same trend is observed in Central Java Province, where the contribution of these sectors to the total GRDP from 2021 to 2025 falls within the range of 1.04 – 4.96% (BPS Provinsi Jawa Tengah, 2026). A similar trend is observed in West Java Province, where the sector's contribution to the total GRDP for the 2021–2025 period ranged from 1.08% to 11.03% (BPS Provinsi Jawa Barat, 2026). While there has been an increase in nominal terms, this growth has not yet been sufficient to match or

Findings from previous studies further underscore the need for an evaluation of the agricultural sector to ensure its future sustainability. Findings from a previous study indicate that the agricultural sector in East Java Province is not classified as a leading sector (Taufiqurrachman, 2022). That study utilized only the LQ and DLQ methods. These two methods can only provide an overview of leading and potential commodities in a given region. The LQ method provides information only on static advantages, while the DLQ method calculates changes in the LQ over time. Neither method has been able to provide specific information on the factors causing the advantages of a particular subsector or commodity. There are 16 regions in Central Java Province where the agricultural sector is not a base sector (Qatrunnada & Rumayya, 2025). The food crops sector and the horticulture sector are the base sectors in West Java (Fauzi et al., 2022) . Both studies used the LQ method and the classical shift-share method. The previous

study employed the classical shift-share method enhanced with the Esteban Marquillas shift-share method. The advantage of the Esteban Marquillas shift-share method is that it not only identifies the factors driving growth but also explains whether a region supports the growth of a specific sub-sector. The objective of this study is to measure the performance of the agricultural sector, which consists of the food crops, horticultural crops, and plantation crops subsectors in the provinces of East Java, Central Java, and West Java.

MATERIALS AND METHODS

Data Sources

This study uses GRDP data for the food crops, horticulture, and plantation subsectors from the Central Statistics Agency of East Java, Central Java, and West Java provinces for the years 2021 through 2025. The GRDP and GDP figures used are based on constant prices, as they do not yet reflect the effects of inflation. East Java, Central Java, and West Java provinces were selected because these three provinces are agricultural hubs on the island of Java.

Data Analysis

Classic Shift-Share and Esteban Marquillas Shift-Share

Shift-share analysis is divided into two types: the classic type and the Esteban Marquillas type. The classic shift-share calculation is derived from the following equation (Yusuf & Panjawa, 2022):

$$Dij = Nij + Mij + Cij$$

Information:
Dij : Change in the GRDP absorption variable for sector i in region j over a specific period
Nij : National growth of sector i in region j
Mij : Industrial mix of sector i in region j
Cij : Competitive advantage of sector i in region j

The calculation of Nij, Mij, and Cij in the shift-share analysis can be expanded as follows (Kristriantono & Yuliawati, 2022) :

Dij : E*ij – Eij
Nij : Eij(rn)
Mij : Eij(rin-rn)
Cij : Eij(rij-rin)
rij : (E*ij-Eij)/Eij
rin : (E*in-Ein)/Ein
rn : (E*n-En)/En

Information:
Eij : GRDP value of sector i in the province under study during the initial period
E*ij : GRDP value of sector i in the province under study during the final period
n : Larger reference region
rij : Growth rate of GRDP for sector i in the province under study
rin : Growth rate of sector i's GDP in the broader region
rn : Growth rate of total GDP for all sectors in the broader reference region
Ein : Value of sector i's GDP in the broader reference region at the beginning of the period
E*in : GDP value of sector i in the broader reference region at the end of the period
En : Total GDP of all sectors in the broader reference region at the beginning of the period
E*n : Total GDP of all sectors in the broader reference region at the end of the period
i ; Food crops, horticulture, and plantation subsectors
j : The provinces of East Java, Central Java, and West Java

The classical shift-share method uses the equation Dij: Eij.rn + Eij.(rin-rn) + Eij.(rij-rn). Meanwhile, in the Esteban-Marquillas shift-share method, the components E'ij, Cij, and Aij are added.

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The component E'ij represents the homothetic sector in a region, formulated by the equation E'ij: Eij(Ein/En) (Alviansyah & Nurhayati, 2024). This component is then substituted into the Cij component. The Cij component measures the competitive advantage of sector i in region j, expressed by the equation Cij: E'ij(rij − rin). The Aij component represents the allocation effect of sector i in region j, expressed by the equation Aij: (Eij − E'ij). (rij-rin). Aij yields the specialization of sector i in region j and the region's competitiveness (Faizal et al., 2022). In the Esteban-Marquillas shift-share method, the equation becomes (Listiawati & Siregar, 2023):

$$Dij = Eij\ (rn) + Eij\ (rin - rn) + E^{*}ij\ (rij - rin) + (Eij - E^{*}ij)\ (rij - rin)$$

There are several possible allocation effects (Aij). The possible allocation effects (Aij) are listed in Table 1.

Table 1.The possible allocation effects (Aij)

Aij	(Eij-E'ij)	(rij-rin)	Keterangan
-	+	-	Does not show competitive advantage, but still shows specialization characteristics
+	-	-	Does not show any competitive advantage and also does not show specialization.
-	-	+	Demonstrates a competitive advantage but does not demonstrate a specialization.
+	+	+	Demonstrating competitive advantages and specializations

Source: (Pasaribu et al., 2020) ;(Alviansyah & Nurhayati, 2024)

RESULTS AND DISCUSSION

The provinces of East Java, Central Java, and West Java form the backbone of agriculture on the island of Java. Agricultural land stretches across these three provinces. The agricultural sector plays a crucial role because it is closely tied to the local economy. This is evident from the sector's substantial GRDP. The GRDP figures for each subsector are presented in Table 2.

Table 2. The GRDP of Food Crops, Horticulture and Plantation Sub-Sector (Billion Rupiahs)

Province	Sub Sector	2021	2022	2023	2024	2025
East Java	Food Crops	48.827,74	48.179,43	48.739,67	47.145,25	51.417,03
	Horticultural Crops	17.675,04	18.828,06	18.992,26	19.080,32	19.807,78
	Plantation Crops	27.092,49	27.017,28	27.456,18	28.159,78	28.540,57
Central Java	Food Crops	38.910,91	38.798,12	38.749,19	38.714,95	40.859,11
	Horticultural Crops	34.328,53	36.577,87	35.435,59	36.515,91	38.447,73
	Plantation Crops	12.618,94	12.976,94	13.302,92	13.338,74	13.576,60
West Java	Food Crops	45.886,81	48.048,10	46.431,96	45.638,95	54.431,23
	Horticultural Crops	21.844,46	22.284,76	22.256,91	22.788,48	23.248,40
	Plantation Crops	8.920,08	9.348,47	9.241,58	9.211,48	9.241,12

Source: (BPS Provinsi Jawa Timur, 2026); (BPS Provinsi Jawa Tengah, 2026); (BPS Provinsi Jawa Barat, 2026)

Food Crop Subsector

The Esteban Marquillas Shift Share results indicate that the food crop subsector experienced growth, but this growth was driven primarily by national-level growth. This result is evident in the positive Nij value. While the growth of the food crop subsector is positive, on the other hand, its growth is not due to the subsector's strong performance but is driven more by external factors, namely national-level growth. This is inseparable from government policies prioritizing food self-sufficiency. Efforts to increase food self-sufficiency have been made, including subsidized fertilizer, superior seeds, irrigation

revitalization, and various other policies. The growth of this crop subsector indicates that these policies are yielding results. In terms of the industrial mix, the food crop subsector experienced slow growth (Mij was negative). Analysis of the food crop subsector using the Esteban Marquillas Shift Share is shown in Table 3.

Table 3. Analysis of the Food Crop Subsector Using the Esteban Marquillas Shift Share

Provinsi	Eij(rn) Nij	Eij(rin-rn) Mij	E'ij(rij-rn) Cij	(Eij-E'ij)(rij-rin) Aij
Jawa Timur	10.803,80	-8.080,84	-13.546,19	-534,87
Jawa Tengah	8.609,57	-6.439,63	-14.497,81	-6.210,35
Jawa Barat	10.153,08	-7.594,12	-13.678,32	-913,02

Source: Data processed, 2026

This confirms previous findings that the growth of the food crops subsector is more due to external factors than the performance of the food crops subsector itself. This slow growth means that economic activity related to the food crops subsector has not experienced significant growth. Based on the regional specialization effect, it can be seen that the food crops subsector in the three provinces has not shown a competitive advantage. This may occur because from 2021 to 2025, the growth rate of the food crops subsector in the three regions was not very strong, even in certain years, the growth rate was negative. The growth rate of food crops in East Java Province was negative in 2022 and 2024 (BPS Provinsi Jawa Timur, 2026) . Central Java Province also experienced a similar situation, with negative growth from 2022 to 2024 (BPS Provinsi Jawa Tengah, 2026). A similar condition also occurred in West Java Province, where growth rates were also negative in 2023 and 2024 (BPS Provinsi Jawa Barat, 2026). A negative growth rate means that output in the form of goods and services has decreased, thus indicating that the performance of the food crops sub-sector in these three provinces is not particularly impressive, or its productivity is not very satisfactory.

The food crops sub-sector has been able to survive due to several supporting factors in the region, one of which is geography. Java is home to rivers that serve as the primary source of irrigation for rice fields. These rivers flow through various regencies and cities, making it easier for local farmers to irrigate their fields. Reservoirs are also scattered throughout the region. The presence of reservoirs facilitates irrigation of rice fields spread across various regions. Food crops, especially rice, require a sufficient supply of water for optimal growth. The availability of rivers and reservoirs will serve as the primary source of irrigation during the dry season. The competitive advantages and specializations of the food crops sub-sector are shown in Table 4.

Table 4. The Competitive Advantages and Specializations of the Food Crops Sub-Sector

Province	Aij	(Eij-E'ij)	(rij-rin)	Information
East Java	-534,87	3.927,19	-0,14	Does not show competitive advantage, but still shows specialization characteristics
Central Java	-6.210,35	14.497,96	-0,43	Does not show competitive advantage, but still shows specialization characteristics
West Java	-913,02	5.318,44	-0,17	Does not show competitive advantage, but still shows specialization characteristics

Source: Data processed, 2026

The findings of this study are supported by those of previous research. Runtunuwu et al., (2022) stated in their study that one of the geographical factors supporting the food crop subsector in East Java is land and irrigation infrastructure. Although there are similarities, that study only explains the factors influencing the food crop subsector in East Java. That study did not explain how the food crop subsector in East Java is performing—whether it is able to grow well or not.

Another study states that food commodities are potential commodities on the island of Java. In East Java Province, the potential commodity is soybeans; in Central Java Province, it is rice and corn;

while in West Java, the potential lies in cassava (Achsa et al., 2022). When compared to this study, the findings of that research are essentially not very different. This study also states that East Java Province serves as a base for the food crop subsector; however, this study explains that the advantages it possesses are primarily due to geographical support rather than because the subsector's performance is exceptionally strong.

Horticultural Crops Subsector

The horticultural crops subsector has recorded positive growth. Similar to the pattern observed in the food crops subsector, growth in this subsector is largely driven by the growth of the horticultural sector at the national level. The highest growth was recorded in Central Java Province. In terms of industrial mix, this subsector has also experienced a slowdown. Currently, free trade agreements between countries have made it easier for imported fruits and vegetables to enter the market, and they often displace local fruits and vegetables. In terms of price and quality, imported horticultural commodities are not significantly different from local horticultural commodities. An analysis of the horticultural crops sub-sector using the Esteban Marquillas shift-share model can be seen in Table 5.

Table 5. An Analysis of the Horticultural Crops Sub-Sector Using the Esteban Marquillas Shift-Share

Province	Eij(rn) Nij	Eij(rin-rn) Mij	E'ij(rij-rn) Cij	(Eij-E'ij)(rij-rin) Aij
Jawa Timur	3.910,84	-2.405,00	3.380,70	-1.767,99
Jawa Tengah	7.595,66	-4.671,00	-10.993,25	-14.954,22
Jawa Barat	4.833,38	-2.972,32	-4.909,37	-8,80

Source: Data processed, 2026

Based on the allocation effect, it appears that the horticultural sub-sector in Central Java and West Java provinces has not yet demonstrated a competitive advantage and is supported solely by regional specialization. The influx of imported fruits and vegetables is one of the factors hindering the performance of the horticultural sub-sector. Based on data from December 2024 to December 2025, horticultural crop exports declined by 9.68%, while imports from December 2024 to December 2025 increased by 24.36% (Sekretariat Jenderal Kementerian Pertanian, 2026). This data confirms that the performance of the horticultural sub-sector, particularly in Central Java and West Java provinces, is not doing well; only in East Java province has the horticultural sub-sector been able to hold its ground. The competitive advantages and specializations of the horticultural sub-sector can be seen in Table 6.

Table 6. The Competitive Advantages and Specializations Of The Horticultural Sub-Sector

Province	Aij	(Eij-E'ij)	(rij-rin)	Information
East Java	-1.767,99	-6.393,51	0,28	Demonstrates a competitive advantage but does not demonstrate a specialization.
Central Java	-14.954,22	21.242,18	-0,70	Does not show competitive advantage, but still shows specialization characteristics
West Java	-8,80	98,14	-0,09	Does not show competitive advantage, but still shows specialization characteristics

Source: Data processed, 2026

Upon closer examination, in the regions of Central Java and West Java, there are several factors supporting the horticultural sub-sector, one of which is infrastructure. Infrastructure also strongly supports the food crop sector. Infrastructure on the island of Java is very well-developed, particularly in terms of transportation. On the island of Java, nearly all areas are already connected by roads. The presence of these roads facilitates the movement of various goods and services that support the horticultural crop sector. Roads and bridges facilitate the movement of horticultural crop inputs—such as fertilizers, seeds, agricultural machinery, and harvested produce—from one region to another. Another

form of infrastructure is storage facilities. Such infrastructure helps store harvested produce before distribution, thereby preventing spoilage.

The findings of this study differ from previous research, which indicated that, in addition to agricultural services, the horticultural sub-sector is the sub-sector with the highest potential to boost the economy and increase community income in Central Java (Hutajulu et al., 2025). That study did not elaborate on the drivers of growth in the horticulture sub-sector. Judhaswati, (2025) explains that the horticulture sub-sector is a leading sub-sector in East Java. This is evidenced by several types of horticultural commodities that serve as the foundation, including: shallots, potatoes, cayenne peppers. Java's economic center is also a reason for the rapid growth of the horticultural sector. Market certainty is the reason why the agricultural sector remains resilient on Java. Java also boasts industries ranging from small-scale to large-scale, processing horticultural commodities, producing semi-finished or finished goods. Horticultural farmers on Java remain interested in cultivating horticultural crops due to the high demand. While the economy is currently shifting toward the industrial sector, demand for horticultural commodities cannot be ignored.

Plantation Crops Subsector

The plantation crops subsector on the island of Java is experiencing growth (positive growth). This growth is also driven by the growth of the national plantation crops subsector. Currently, the plantation crops sub-sector is receiving special attention because it serves as the backbone of Indonesia's exports. Among the three provinces, the growth of the plantation crops sub-sector in East Java is greater than that in Central Java and West Java. Regarding the industrial mix, it is evident that the plantation crops sub-sector is experiencing slow growth (negative Mij). An analysis of the plantation crops sub-sector using the Esteban Marquillas shift-share model can be seen in Table 7.

Table 7. Analysis Of The Plantation Crops Sub-Sector Using the Esteban Marquillas Shift-Share

Province	Eij(rn) Nij	Eij(rin-rn) Mij	E'ij(rij-rn) Cij	(Eij-E'ij)(rij-rin) Aij
East Java	5.994,58	-4.053,43	72.273,02	-47.064,92
Central Java	2.792,11	-1.887,97	52.958,37	-36.989,58
West Java	1.973,69	-1.334,57	301.956,76	-262.507,67

Source: Data processed, 2026

Plantation crops tend to experience a decline in productivity due to the age of the plants. As plants age, their productivity decreases, making replanting necessary. Replanting is often hindered by cost issues, particularly in smallholder plantations. Another factor contributing to the slow growth of the plantation subsector is weather anomalies. Plantation crops are vulnerable to reduced production due to extreme weather. They require specific agroclimatic conditions such as elevation, temperature, rainfall, and humidity. Currently, the occurrence of La Niña and El Niño phenomena makes agroclimatic conditions increasingly difficult to predict, thereby affecting plantation crop production.

The plantation crop subsector benefits from favorable geographical conditions. Java Island features numerous highlands. These highlands serve as the natural habitat for plantation crops. Crops such as tea, coffee, and cocoa require highland terrain to thrive. The availability of processing industries also supports the plantation crop sector. On the island of Java, there are many companies that process plantation crops, such as sugar companies, coffee companies, tea companies, and others. The availability of these industries is the reason why farmers on the island of Java are still willing to cultivate and manage plantation land.

The plantation crop subsector possesses a competitive advantage. This competitive advantage is achieved by improving the quality of plantation crop yields through quality certification. Quality certifications for plantation crops include Hazard Analysis and Critical Control Points (HACCP), Good Manufacturing Practice (GMP), and Rainforest Alliance. HACCP certification pertains to food safety. Plantation crops are generally export commodities, and destination countries enforce very strict quality standards. The presence of an HACCP certificate facilitates the entry of these commodities into destination countries. GMP serves as a guarantee that a commodity has been processed using proper and

correct methods. Like HACCP, GMP certification facilitates the entry of plantation crop commodities into destination countries because HACCP and GMP certifications are recognized globally. Additionally, Rainforest Alliance certification is necessary to ensure that the produced plantation crops do not harm the environment. The competitive advantages and specializations of the horticultural sub-sector are outlined in Table 8.

Table 8. The Competitive Advantages and Specializations Of The Horticultural Sub-Sector

Province	Aij	(Eij-E'ij)	(rij-rin)	Information
East Java	-47.064,92	-36.692,39	1,28	Demonstrates a competitive advantage but does not demonstrate a specialization.
Central Java	-36.989,58	-22.061,64	1,68	Demonstrates a competitive advantage but does not demonstrate a specialization.
West Java	-262.507,67	-48.710,59	5,39	Demonstrates a competitive advantage but does not demonstrate a specialization.

Source: Data processed, 2026

Based on this data, it can be seen that the plantation subsector possesses a competitive advantage. This competitive advantage is solely due to the increase in productivity within the plantation crop subsector. This rise in productivity has enabled the plantation subsector to meet domestic demand on its own and reduce its reliance on imports. From 2024 to 2025, the value of exports from the plantation sub-sector was higher than the value of imports. The volume of Indonesia's plantation exports for the 2024–2025 period grew by 14.74%, while imports decreased by 34.17% (Sekretariat Jenderal Kementerian Pertanian, 2025).

Different results have been reported in previous studies. Suri et al., (2024) noted that among the 8 types of plantation crops (coffee, sugarcane, rubber, tea, coconut, tobacco, oil palm, and cocoa), none were deemed promising. The discrepancy in these findings stems from the differing methodologies employed. That study employed the Dynamic Location Quotient (DLQ) method, whereas this study uses the Esteban Marquillas Shift-Share method. The DLQ method merely measures the prospective nature of a commodity without considering the underlying reasons—whether the commodity's potential stems purely from the performance of the commodity or sub-sector itself or from geographical factors. This study employs the Esteban Marquillas shift-share method, resulting in more specific findings as it provides information on whether a commodity or subsector's performance is satisfactory.

Hanafi et al., (2025) state in their study that the plantation subsector is one of the leading subsectors on the island of Java. The study takes into account factors ranging from regional suitability to funding sources. This means that, with more complex variables, the findings of other studies reinforce this research.

The food crops and horticultural crops subsectors face a similar situation, as neither of these sectors has yet demonstrated competitive advantages or regional specialization (except for the horticultural crops subsector in East Java Province). The food crops and horticultural crops subsectors have managed to survive because supportive factors in those regions have enabled them to persist to this day. This implies that the performance of the food crops and horticultural crops subsectors remains unsatisfactory. The plantation crops sub-sector possesses a competitive advantage but has not yet been able to fully utilize the supporting factors available in the region. The challenges faced by these three sectors include: limited agricultural land, shrinking agricultural land, limited capital, difficult access to agricultural inputs, difficult access to credit, difficult access to facilities, difficult access to infrastructure, difficult marketing of agricultural products, natural factors, pests and diseases, and others. Among these factors, the most dominant are plant pests and diseases, natural factors, and the difficulty in accessing agricultural inputs.

Difficulties in Accessing Agricultural Inputs

Difficulties in accessing agricultural inputs are experienced only by individual farmers. These difficulties take the form of scarcity and high prices. This occurs because individual farmers generally have limited capital, making it difficult for them to obtain agricultural inputs such as fertilizers, seeds, and

agricultural machinery. Farmers operating on a small scale find it difficult to secure discounts because their purchase volumes are not large enough to qualify for such discounts. Subsidies or assistance for agricultural inputs such as fertilizers and agricultural machinery for individual farmers have been provided, but the available quotas are very limited. This poses a significant challenge for individual farmers. On average, 54.71% of individual farmers in 38 regencies and cities in East Java Province face difficulties in accessing production inputs (BPS Provinsi Jawa Timur, 2024). Similar issues are also occurring in Central Java, where an average of 45.34% of individual farmers in the province face difficulties accessing agricultural inputs (BPS Provinsi Jawa Tengah, 2024). The same problem is present in West Java, with a rate of 47% (BPS Provinsi Jawa Barat, 2024).

Plant Pests and Diseases

Plant pests and diseases are perennial problems in the agricultural sector. Pest and disease infestations can lead to reduced yields or even crop failure. This is certainly detrimental to food crop farmers, as production costs—such as fertilizers, seeds, and other inputs—are very high. The combination of natural factors and plant pests and diseases contributes to price fluctuations. Farmers often face the problem of selling prices tending to drop at harvest time. Essentially, the market is available, but fluctuating selling prices pose a challenge that individual agricultural producers must confront. The issue of price fluctuations remains a persistent problem to this day. These price fluctuations are caused not only by natural factors but also by the quality of the harvest. Generally, individual farmers tend to sell their harvests in their raw state. Selling agricultural commodities in their raw state tends to make them prone to quality degradation. Harvests that experience this quality degradation result in lower selling prices for agricultural products. Census results in East Java Province indicate that, on average, 43.47% of individual farmers across 38 regencies and cities face issues with plant pests and diseases (BPS Provinsi Jawa Timur, 2024). The problem of plant pests and diseases in Central Java Province is even more severe, with a rate of 62.12%(BPS Provinsi Jawa Tengah, 2024). West Java experiences even more severe problems, with an average of 64.62% experiencing plant pest and disease problems (BPS Provinsi Jawa Barat, 2024). This quantitative data provides clear evidence that plant pest and disease problems are a real issue impacting the agricultural sector.

Natural Factors

Currently, weather anomalies such as extreme rainfall and heat are also affecting the agricultural sector. Extreme rainfall causes crop damage, while extreme heat leads to water shortages, resulting in suboptimal crop growth. The impact of weather anomalies on the agricultural sector is also described in other studies. Shifts in the rainy season patterns have caused rice planting schedules to shift as well (Rozci, 2024). Changing rainfall patterns, rising temperatures, floods, and droughts have resulted in decreased soil fertility and lower crop yields (Ramandilla et al., 2025)

In general, the agricultural sector still lags behind the manufacturing sector. The agricultural sector's contribution to the regional economy remains lower compared to the manufacturing sector. In other words, the manufacturing sector is the primary driver supporting the economies of East Java, Central Java, and West Java provinces. The growth rate of the manufacturing sector's GRDP in these three provinces from 2021 to 2025 has consistently been positive, never once turning negative. This indicates that the manufacturing sector is more stable. Analysis using the Esteban Marquillas shift-share method indicates that the food crops and horticulture subsectors have been able to sustain themselves largely due to geographical advantages. Since 2021, these two subsectors have managed to remain resilient not only because of geographical factors but also due to the boost from growth at the

The implication of this policy is the need for revitalization in the food crops and horticulture subsectors. This revitalization can be achieved through intensification. This is because extensification is very difficult to implement, as expanding agricultural land is extremely challenging. There are many issues where agricultural land is being converted for industrial, residential, or other development purposes. Intensification measures that can be implemented include: providing high-quality seeds, expanding the quota for subsidized fertilizers, improving irrigation, and implementing weather mitigation strategies to address increasingly unpredictable weather conditions. Policy makers also need to focus on pest and disease control, access to agricultural inputs, and natural factors. These issues are the most dominant and therefore require greater attention.

CONCLUSIONS

The performance of the food crops and horticultural crops subsectors needs to be improved, while the plantation subsector needs to be maintained. This is because the food crops and horticultural crops subsectors have been able to survive due to significant geographical advantages, meaning that their actual performance is not particularly strong and their survival is largely due to these geographical factors. The implications of these research findings are that policymakers need to focus on the urgent issues hindering the performance of the food crops and horticultural sub-sectors, including: limited access to agricultural inputs, plant pests and diseases, and natural factors.

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