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Development of Leading Commodities for Vegetable and Fruit Crops in Brebes Regency, Central Java

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ABSTRACT

Determining leading commodities is very important to increase regional competitiveness in economic development. This research aims to identify leading commodities for vegetable and fruit crops in the Brebes Regency, analyze the continuity of leading commodities, and determine the pattern and structure of leading commodities. The research uses a quantitative approach with secondary data for 2018-2022. Data were analyzed using the Location Quotient (LQ), Dynamic Location Quotient (DLQ), and Klassen Typology analysis methods. The analysis results show that Brebes Regency's leading commodities for vegetable and fruit crops are shallot, rose apple, mango, banana, sapodilla, breadfruit, apple, melinjo, and twisted cluster bean. Potential commodities that have the opportunity to become leading commodities in the future are welch onion, yard long bean, chilli, cayenne pepper, tomato, eggplant, green bean, chayote, duku, guava, tangerine, mangosteen, pineapple, papaya, rambutan, salacca, grape, and jengkol. The pattern and structure of vegetable and fruit crops in Brebes Regency, which is considered advanced and fast-growing, is shallots. Plants with fast-growing patterns and structures are garlic, Welsh onion, cabbage, yard long bean, chili, cayenne pepper, tomato, eggplant, green bean, cucumber, chayote, water spinach, melon, watermelon, star fruit, duku, durian, rose apple, tangerine, mangosteen, pineapple, papaya, banana, grape, and jengkol.

Keywords: *Leading Commodities, Location Quotient, Dynamic Location Quotient, Klassen Typology*

1. INTRODUCTION

Indonesia's economic growth can be strengthened by the agricultural sector, which is considered the foundation of Indonesia, especially in uncertain global economic conditions [1]. The Central Statistics Agency (BPS) noted that the agricultural sector's contribution to Gross Domestic Product (GDP) based on basic prices in 2023 increased in the third quarter by 718.4 trillion rupiah from the previous quarter, namely 697.6 trillion rupiah. Furthermore, GDP at constant prices also increased in the second quarter of 391.0 trillion rupiah to 397.3 trillion rupiah in the third quarter of 2023[2] . One of the contributors to the agricultural sector is the horticultural crops subsector, which grew 3.4 percent (YoY). The horticulture subsector plays a role in inhibiting the increase in inflation, one of which is the deflation of the shallot commodity due to the simultaneous harvest in some regencies center for shallot production, such as Brebes, Metro, South Lampung, Bantul, Ponorogo, Nganjuk and East Kutai [3].

Brebes Regency is one of the national shallot centers. In terms of production, the agricultural, forestry and fisheries sectors contribute 36.01% to the economy of Brebes Regency. This is supported by the Brebes Regency location along the Java Sea's north coast, which extends south and borders the Banyumas Regency area. In line with this, the agricultural sector is ranked third in supporting the employment of the people of Brebes, amounting to 246,196 people [4].

The potential of Brebes Regency, which is quite significant in the agricultural sector, needs to be developed according to the leading agricultural commodities in each region in the Brebes Regency. The diversity of vegetable and fruit production can encourage regions to increase export

potential, especially tropical fruits [5]. The challenge in implementing a development strategy focusing on leading commodities lies in increasing productivity and efficiency in each agricultural subsector. This aims to produce various value-added agricultural commodities through optimizing regional potential to increase competitiveness in both domestic and global markets [6].

Research on leading commodities, especially vegetable and fruit crops in Indonesia, has been conducted in several regions. One of the leading commodities for vegetable crops in Mandailing Natal Regency is long beans, eggplant, kale, cayenne pepper, large chillies, and tomatoes [7]. In contrast to Mandailing Natal Regency, research on leading vegetable crop commodities in Lampung Province has two types of vegetable crops, which are leading commodities seen from the LQ value greater than 1, namely chili and Chinese cabbage [8]. On the other hand, leading fruit commodities in Banyuwangi Regency found that durian, siamese oranges, and mangosteen are fruit commodities with competitive advantages, but only mangosteen is a fruit commodity with comparative advantages and competitive advantages [9]. Furthermore, [10]explained in their research that leading fruit commodities in Pasangkayu Regency showed that duku, durian, and mango commodities experienced a change in position, namely from non-leading to leading.

Research on leading commodities in Brebes Regency itself has been conducted by [11]regarding leading agricultural commodities as a whole, with the leading commodities being shallots, milkfish, and potatoes, and [12]who researched leading commodity crops in the Regency. Brebes consists of lowland rice, field rice, corn, cassava, sweet potato, and peanut commodities spread across ten sub-districts [11], [12]. However, there has been quite a lot of research in Indonesia that discusses leading commodities of vegetable and fruit crops, as well as research on leading agricultural commodities in Brebes Regency in the past. However, limited research still thoroughly examines the leading commodities of vegetable and fruit crops in the Brebes Regency. Therefore, it is important to carry out this research to identify the leading commodities of vegetable and fruit crops, the continuity of leading commodities of vegetable and fruit crops, as well as the pattern and structure of vegetable and fruit crops leading commodities in Brebes Regency so that it can complement previous research and can provide suggestions for stakeholders regarding strategies for developing leading commodities for vegetable and fruit crops.

2. LITERATURE REVIEW

2.1 Leading Commodities

Developing leading commodities is a policy in economic development that uses the principle of competitive advantage. The development of leading commodities encourages a region to develop one or two main commodities that have high competitiveness according to competitive advantages supported by comparative advantages [13]. Increasing competitiveness is essential in the era of globalization so that product marketing will be more secure and production activities can take place sustainably [13]. The comparative advantage of a commodity for a country or region is that the commodity is leading relative to other commodities in the region. The definition of leadingity in this case is in the form of comparison and not in the form of real added value. Comparative advantage is a comparatively more profitable economic activity for regional development [14].

Leading commodities follow the region's agroecology and are competitive the regional market, other regions, national markets, and international markets [15]. The

production factors needed to create competitive advantage are (a) human resources; (b) natural resources in the form of land availability with indicators of quantity, quality, accessibility, price of land, water, minerals, as well as climate and location; (c) knowledge resources; (d) capital resources, the indicators are the amount and value of investment to support leading products in a region; and (e) regional infrastructure, such as transportation, telecommunications and energy networks ((Daryanto, 2004).

2.2 Development Based on Leading Commodities

The ability to spur growth in a region or country depends on the leading or competitiveness of the economic sectors in the region. The strategic value of each sector in becoming the main driver (prime mover) of regional economic growth is different. The economic sector of a region can be divided into two groups, namely the base sector and the non-base sector [17] The base sector is where the advantages and disadvantages that occur in the process of meeting these needs lead to export and import mechanisms between regions. [18]stated that the base sector would produce goods and services for the domestic market and markets outside the region or region (exports), while the non-base sector only carries out activities that can fulfil the domestic market.

Sector development has synergy with regional development. Leading sectors are a strong foundation for the development of a region. The growth of leading sectors also encourages other sectors to develop because of the linkages between sectors. According to [19] the agricultural sector is one of the crucial sectors in achieving the vision of Indonesia 2030. This sector will provide food, bioenergy, industrial raw materials (food, feed, biopharmaceuticals, biochemicals, biomaterials), business opportunities, employment opportunities, and environmental management. Food must be available sufficiently and evenly for all Indonesians to fulfill their needs for a healthy and productive life. This can be realized by creating food security in production and consumption.

3. METHODS

3.1 Types of Data

This research uses a quantitative approach. The data source used is secondary data with time series data over five years. Secondary data collected includes horticultural crop production data, commodity price data, and other supporting data. Horticultural crop production data consists of seasonal vegetable and fruit crops and annual fruit and vegetables in Brebes Regency and Central Java Province in 2018 – 2022. Secondary data was obtained from the Department of Agriculture and Plantation Central Java Province, Brebes Regency Central Statistics Agency, Central Java Province Central Statistics Agency, as well as from books, scientific articles, journals, and previous related research.

3.2 Data Analysis

Leading commodities are determined using the Location Quotient (LQ) analysis technique. LQ analysis determines whether a sector is a base or non-base sector. The LQ value can indicate a region's ability to produce a commodity. The data used in this research is on the production value of vegetable and fruit crops in Brebes Regency and Central Java Province. Meanwhile, to determine the continuity of leading commodities in Brebes Regency is used Dynamic Location Quotient (DLQ) method. The DLQ method modifies the LQ method by accommodating economic sector output growth rate factors over time. The results of LQ analysis are static, while DLQ analysis is dynamic. The DLQ method can predict possible changes or sectoral repositioning of an agricultural commodity. To see the repositioning of leading commodities in the future, combine LQ and DLQ

analysis [20]. The last is Klassen Typology Analysis. Klassen Typology is used to determine the pattern and structure of growth of horticultural commodities in the Brebes Regency. In this study, two variables were used to carry out the Klassen Typology Analysis: growth rate and contribution of commodity production value.

4. RESULTS AND DISCUSSION

4.1 Leading Commodities of Vegetable and Fruit Crops in Brebes Regency

The leading commodities of vegetable and fruit crops in Brebes Regency can be seen from the LQ values presented in Table 1. There are three leading commodities (LQ> 1) in vegetable crops: shallot, melinjo, and twisted cluster bean. As is known, Brebes Regency is often known for its leading plant, namely shallot [21]. Over the last five years, Brebes Regency contributed an average of 65.81% to Central Java's shallot production. Meanwhile, Central Java is the largest contributor to national shallot production, contributing 28.15% in 2021[22] . In 2022, shallot production in Brebes Regency will reach 3,836,802 quintals. The production value of shallots in Brebes Regency contributes to regional and national income because shallots are classified as a high-value horticultural commodity [23]As one of the main production centers for shallots, Brebes Regency also contributes to national shallot exports. In 2021, Indonesian shallot exports to Thailand will reach 67.51%, equivalent to 4.6 million USD[24]. This makes the Brebes Regency the largest contributor to the GRDP in the Agricultural Sector in Central Java Province[25]

Table 1. Results of LQ and DLQ analysis of vegetable and fruit commodities in Brebes Regency 2018-2022

Commodity	LQ	DLQ	Commodity	LQ	DLQ
Shallot	**2,38**	0,88	Avocado	0,28	0,57
Garlic	0,03	0,62	Durian	0,34	0,94
Welch onion	0,43	**1,41**	Guava	0,90	**1,11**
Potato	0,61	0,85	Rose Apple	**1,27**	0,85
Cabbage	0,38	0,94	Tangerine	0,10	**1,19**
Carrot	0,38	0,80	Pomelo	0,22	0,40
Yard long bean	0,02	**2,81**	Mango	**2,14**	**1,02**
Chili	0,63	**1,41**	Mangosteen	0,31	**1,59**
Cayenne Pepper	0,68	**1,08**	Jackfruit	0,43	0,96
Mushroom	0,28	0,32	Pineapple	0,01	**1,42**
Tomato	0,11	**1,43**	Papaya	0,40	**1,53**
Eggplant	0,17	**1,33**	Banana	**1,28**	**1,11**
Green Bean	0,36	**1,23**	Rambutan	0,32	**1,06**
Cucumber	0,12	0,19	Salacca	0,01	**1,09**
Chayote	0,20	**1,10**	Sapodilla	**4,71**	0,96
Water Spinach	0,05	0,97	Soursop	0,67	0,90
Melinjo	**1,45**	0,94	Breadfruit	**1,10**	0,92
Twisted Cluster Bean	**2,08**	0,85	Apple	**20,47**	0,33
Jengkol	0,37	**2,17**	Grape	0,84	**1,44**
Star Fruit	1,99	**1,17**	Melon	0,06	0,36
Duku	0,34	**1,48**	Watermelon	0,19	0,73

Source: Secondary Data Analysis (2023)

Twisted cluster bean and melinjo are two of the leading crops in Brebes Regency. These two plants are popular among Indonesian people. Brebes Regency cultivates a lot of these two plants. Over the last five years, Brebes Regency has contributed 3.61% of production in Central Java, while Melinjo has contributed 2.48%. In 2021, Central Java Province contributed 1,271,431 quintals to Indonesia's twisted cluster bean production, ranked second after East Java Province [22]. The area planted with twisted cluster beans in Brebes Regency in 2022 will be 57,991 hectares, most of which

will be cultivated in Bantarkawung District (14,300 trees), Paguyangan District (11,749 trees), and Banjarharjo District (10,122 trees). The highest production is in Bantarkawung District, reaching 12,500 quintals. Meanwhile, the area planted with melinjo in 2022 will be 81,384 hectares, larger than twisted cluster beans. Melinjo production in 2022 reached 14,494 quintals, an increase from the previous year, namely 13,714 quintals. Melinjo production centers in Brebes Regency are in Tonjong District (32,254 trees), Bumiayu District (21,105 trees), and Paguyangan District (14,453 trees) [26]

As for fruit crops, there are six leading commodities: rose apple, mango, banana, sapodilla, breadfruit, and apple. Over the last five years, sapodilla commodities contributed 8.07% to production in Central Java, with production in 2020 reaching 21,963 quintals and in 2022 decreasing to 12,950 quintals. Losari District has become a production center in the Brebes Regency, producing 7960 quintals in 2022[26]Apart from sapodilla, bananas are one of the leading commodities. Over the last five years, banana commodities have contributed an average of 2.17% of Central Java provincial production. The banana commodity is one of the leading horticultural commodities in Central Java, which is a contributor to the GRDP in the agricultural sector [25]Almost all sub-districts in the Brebes Regency cultivate bananas, but Losari District and Bantarkawung District are the centers and main contributors to banana production in the Brebes Regency. In 2022, there will be 260,743 clusters of banana plants with a production of 1,561,720 quintals in Losari District (Dinas Komunikasi Informatika dan Statistik Kabupaten Brebes Tahun 2023, 2023).

Mango plants are widely cultivated in Brebes Regency with a planting area in 2022 of 410,450 hectares. Most sub-districts in Brebes Regency cultivate mangoes. Banjarharjo, Losari, Keuhanan, Jatibarang, Bantarkawung, and Bulakamba districts are the most significant mango plants. Bantarharjo District has the most significant number of plants, namely 95,395 trees, but the production is only 360 quintals, while Bulakamba District has 23,182 trees but produces 2,038 quintals. The potential for developing mangoes in Brebes Regency to remain a leading commodity is still immense. However, climate change and plant pests are factors for decreasing production in mango cultivation, which farmers in Brebes Regency must anticipate [27].

4.2 Continuity of Vegetable and Fruit Crops Production in Brebes Regency

Brebes Regency's vegetable and fruit crop production continuity can be seen from the DLQ values in Table 1. Based on the results of the analysis, nine vegetable crop commodities have production continuity in the future (DLQ > 1), namely welch onion, yard long bean, chilli, cayenne pepper, tomato, eggplant, green bean, chayote, and jengkol. Over the last five years, the growth rate of these commodities in Brebes Regency was greater than in Central Java Province. Over the last five years, yard-long beans have had the greatest growth rate, namely 118.81%, followed by welch onion (44.42%), eggplant (44.37%), tomato (38.46%), cayenne pepper (34.47%). %), chayote (26.03%), and green bean (25.06%). The positive production growth rate indicates that this commodity has great potential in the future and still has opportunities for continued development.

As for fruit crops, 12 fruit crop commodities will have sustainable production in the future, namely star fruit, duku, guava, tangerine, mango, mangosteen, pineapple, papaya, banana, rambutan, salacca, and grape. Grapes have a reasonably large growth rate, namely 285.26%, as do jengkol (73.21%), pineapple (29.73%), mangosteen (10.15%), and duku (3.40%). However, this commodity still has small production, which shows that it is not a top priority for development even though it has a positive growth rate and future production continuity. However, there are still opportunities to optimize the production of these plants, for example, mangosteen. Currently, the mangosteen plantation area in Brebes Regency is 4,066 hectares with a harvest area of 1,655 trees, but production is still low, namely 380 quintals with a focus on development in Salem and Bantarkawung Districts.

The starfruit commodity has a relatively large average production growth rate of 20.77%, with a contribution in 2022 of 3.55%. Star fruit production in 2022 is relatively high, namely 7,458 quintals, an increase of 42.79% from previous production. Starfruit production in Brebes Regency is ranked seventh in Central Java, with productivity in 2022 greater than the average in Central Java.

Furthermore, [28] studied starfruit farming and found it to be a profitable farming business. Increased harvest area, competitive productivity, and profitable business will mean that star fruit commodities will be able to be produced continuously in the future. Agrotourism can also be an opportunity to increase product demand, production quantities, and selling prices, develop product processing innovations, and open up employment opportunities for the community ([29].

Production continuity is closely related to the position of leading commodities in the future. Based on the combined LQ and DLQ analysis, shallot commodities have experienced a repositioning from leading commodities to non-leading commodities in the future (LQ> 1; DLQ < 1). The average growth rate of shallot over the last five years is still positive but fluctuating with an average of 8.13%. In 2021 the growth rate of shallot production will decrease by 6.76%. This is due to the harvest area decreasing by 13.53% in 2021 and declining by 3.57% in 2022. The harvest area of shallot in 2022 is 32,509 hectares with a productivity of 118.02 quintals/hectare. Shallot productivity has been increasing from 2017 to 2022; however, the decline in the growth rate of harvested areas contributes to the sustainability of shallot production in the future. The presence of pests and diseases and high production inputs prices are production risks farmers face in maintaining shallot productivity [30]. Sustainable agriculture is a strategy that can be implemented so that agricultural production remains stable [25].

On the other hand, many vegetable commodities are experiencing a repositioning from non-leading commodities to becoming leading commodities in the future (LQ < 1; DLQ > 1), namely welch onion, yard long bean, chili, cayenne pepper, tomato, eggplant, green bean, chayote, and jengkol. Currently, Brebes Regency is ranked first in cayenne pepper production. Cayenne pepper production in 2022 will be 620,988 quintals or contribute 26% to Central Java production. The current productivity of cayenne pepper is 148.03 quintals/hectare, which is greater than the average productivity in Central Java. Apart from that, the welch onion commodity also has great potential. Brebes Regency is ranked second after Wonosobo Regency for welch onion production. Welch onion production in 2022 will be 174,342 quintals with a productivity of 108.90 quintals/hectare, greater than the average productivity of Central Java. To develop this potential commodity, it is necessary to form farmer groups. The formation of farmer groups plays an important role in supporting the development of the agricultural sector in Brebes Regency [31]especially in managing leading agricultural commodities.

In fruit crops, three commodities remain leading now and in the future (LQ> 1; DLQ > 1): star fruit, mango, and banana. Mangoes and bananas are widely cultivated in Brebes Regency, as seen from the large number of plants in each sub-district. One method of developing mango fruit to remain sustainable is cultivating mangoes out of season. Besides increasing farmers' income, cultivating mangoes during the off-season also increases production yields [32]. The high productivity of star fruit plants means that star fruit will remain a leading commodity in the future. The banana commodity has the largest planted area (558,900 hectares) in Brebes Regency compared to other fruits, this encourages bananas to remain a leading commodity in the future.

The following fruit plants have the potential to be developed (LQ < 1; DLQ > 1), namely duku, guava, tangerine, mangosteen, pineapple, papaya, rambutan, salacca, and grape. The continuity of production makes this commodity a leading product in the future. Currently, Brebes is ranked sixteenth for guava production. Guava production in Brebes Regency has increased from 2018 to 2021, with production in 2022 amounting to 14,225 quintals. Guava is classified as a profitable commodity [33], with various leading varieties making it interesting to cultivate. In addition, Brebes Regency allocated 39,936 hectares for rambutan plants with production centers in Salem District, Paguyungan District, Banjarharjo District, and Tonjong District. The number of plants currently available is not comparable to the number of plants harvested, so there is still potential for development through plant care.

The following commodities have experienced a repositioning from leading commodities to non-leading commodities (LQ > 1; DLQ < 1), namely rose apple, sapodilla, breadfruit, and apple.

Currently, sapodilla commodities in the Brebes Regency are among the leading commodities. In terms of production, sapodilla commodities are ranked fourth in Central Java. Regarding the number of plants that are produced, Brebes Regency is in first place, with the number of plants in 2022 amounting to 14,526 trees. However, sapodilla productivity in Brebes Regency is much lower than in competing districts. Currently, sapodilla productivity in Brebes Regency is only 0.89 quintals/tree. However, Tegal Regency can reach 22.76 quintals/tree, Rembang Regency can reach 3.25 quintals/tree, and Wonogiri Regency can reach 1.34 quintals/tree. This needs to be paid attention to to maintain the competitiveness of these commodities in the future, one of which is increasing their productivity.

Meanwhile, avocado, durian, pomelo, jackfruit, and soursop remain non-leading commodities (LQ < 1; DLQ < 1). Production of avocado, durian, jackfruit, and soursop in Brebes Regency is relatively high compared to other fruits because it has a fairly large planting area compared to other crops. For example, Durian, the planting area for durian in 2022 will be 70,347 hectares with 12,667 trees, while jackfruit has a planting area of 24,587 hectares with a total of 12,919 trees. However, this number is still meager compared to other districts in Central Java Province. Almost every district in Central Java cultivates durian, jackfruit and avocado plants with large production. One of the reasons this commodity cannot compete is because it has pretty low productivity. The productivity of durian plants in Brebes Regency is only 0.57 quintals/tree, much lower than the average durian productivity in Central Java, which is 1.48 quintals/tree. Likewise with avocados, avocado productivity in Brebes Regency is only 0.81 quintals per tree, while in Central Java, it is 1.84 quintals/tree.

4.3 Growth Patterns and Structure of Vegetable and Fruit Crops in Brebes Regency

The pattern and structure of growth of vegetable and fruit commodities in Brebes Regency is known through Klassen Typology analysis. Many vegetable plants are cultivated in Brebes Regency, as shown in Table 2. Shallots are a plant that has the potential to continue to be developed in Brebes Regency. Based on the Klassen Typology, shallots are included in the advanced and fast-growing categories. The growth rate of shallot income at both district and provincial levels continues to increase. Shallot production reached 4,455,855 quintals in 2018 and increased by 1,109,243 quintals in 2022. Brebes Regency's average annual growth rate of shallot production is 6.48 percent. Based on data from the Central Statistics Agency, in 2020, 65 percent of shallot production in Central Java came from Brebes Regency, amounting to 3,835,111 quintals which is equivalent to 383,511.1 tonnes.

Meanwhile, shallots production in Indonesia reached 1.82 million tons in 2020. Brebes Regency's shallot contribution at the national level reached 21 percent. This shows that Central Java Province, especially Brebes Regency, is one of the main areas for shallot production at the national level [34].

Table 2. Results of Klassen Typology analysis of vegetable crops in Brebes Regency 2018-2022

Commodity	Growth Rate		Contribution		Information
	Regency (rb)	Province (rp)	Regency (yb)	Province (yp)	
Shallot	8,133	6,482	0,730	0,313	Advanced and fast-growing
Garlic	37,034	9,619	0,001	0,017	Fast-growing
Welch onion	44,418	1,068	0,024	0,057	Fast-growing
Potato	-1,663	-0,894	0,051	0,085	Left behind
Cabbage	-2,774	-7,202	0,016	0,041	Fast-growing
Carrot	-5,882	-2,607	0,013	0,034	Left behind
Yard long bean	118,807	-6,058	0,000	0,010	Fast-growing
Chilli	-0,662	-21,949	0,035	0,061	Fast-growing
Cayenne Pepper	34,473	14,929	0,055	0,078	Fast-growing

Mushroom	-49,679	-13,758	0,060	0,152	Left behind
Tomato	38,457	-2,711	0,001	0,013	Fast-growing
Eggplant	44,365	10,089	0,002	0,014	Fast-growing
Green Bean	25,065	-9,367	0,002	0,006	Fast-growing
Cucumber	30,255	-3,640	0,001	0,006	Fast-growing
Chayote	26,031	4,610	0,005	0,027	Fast-growing
Water Spinach	17,339	3,628	0,000	0,010	Fast-growing
Melinjo	-2,439	6,520	0,020	0,795	Left behind
Twisted Cluster Bean	-1,659	8,681	0,246	6,977	Left behind
Jengkol	73,206	19,082	0,006	0,991	Fast-growing

Sources: *Secondary Data Analysis (2023)*

The study's results show that shallots in Brebes Regency can continue to be developed because they have a positive growth rate and a large income contribution for Brebes Regency and Central Java Province compared to other commodities. Most of the population in Brebes Regency works in the agricultural sector, where shallots are one of the leading products [35]. Apart from that, shallots have high value, so many farmers cultivate them [36]. The potential of shallots can be increased by providing added value, for example, selling in the form of fried shallots because apart from increasing the selling value, fried shallots can also be stored for a long time and have no less demand than raw shallots [37]. Shallot production results in Brebes Regency can still be increased by increasing the production factors of land area, seeds, fertilizer, and labor [38] added value for shallots to increase income.

In Table 2, most vegetable commodities in the Brebes Regency are in the fast-growing category. Welch onions, cayenne peppers, and chayote have a higher rate and contribution percentage value than other commodities in the fast-growing category. Based on data from the Central Statistics Agency, welch onion production in Brebes Regency will reach 1.2 million quintals in 2022, with an average production growth rate of 1.07 percent per year. Cayenne pepper production 2022 will reach 2.4 million quintals with an average growth rate of 14.93 percent per year. Cayenne pepper is one of the vegetable commodities in Brebes Regency, which has a high production growth rate compared to other vegetable commodities. This shows that the cayenne pepper commodity continues to grow in the Brebes Regency. Chayote production in 2022 will be 1.13 million quintals with an average annual growth rate of 4.6 percent.

Table 3. Results of Klassen Typology analysis of fruit crops in Brebes Regency 2018-2022

Commodity	Growth Rate		Contribution		Information
	Regency (rb)	Province (rp)	Regency (yb)	Province (yp)	
Avocado	-7,976	33,042	0,010	2,506	Left behind
Star Fruit	20,771	9,725	0,011	0,335	Fast-growing
Duku	3,405	-7,820	0,002	0,340	Fast-growing
Durian	10,987	7,505	0,044	7,704	Fast-growing
Guava	8,521	13,668	0,017	1,172	Left behind
Rose Apple	13,764	29,347	0,019	0,948	Fast-growing
Tangerine	-1,481	-2,329	0,001	0,435	Fast-growing
Pomelo	-4,919	11,922	0,001	0,367	Left behind
Mango	-1,299	3,553	0,216	5,934	Left behind
Mangosteen	10,150	-18,161	0,002	0,352	Fast-growing
Jackfruit	-5,027	2,131	0,038	5,205	Left behind
Pineapple	29,725	16,267	0,000	2,590	Fast-growing
Papaya	27,468	4,982	0,006	0,878	Fast-growing
Banana	17,356	13,688	0,283	13,033	Fast-growing
Rambutan	3,904	4,808	0,008	1,581	Left behind

Commodity	Growth Rate		Contribution		Information
	Regency (rb)	Province (rp)	Regency (yb)	Province (yp)	
Salacca	0,708	4,480	0,001	4,799	Left behind
Sapodilla	12,596	14,920	0,048	0,610	Left behind
Soursop	8,238	31,942	0,004	0,354	Left behind
Breadfruit	-6,307	7,450	0,015	0,805	Left behind
Apple	-5,959	145,166	0,000	0,000	Fast-growing
Grape	285,262	134,433	0,000	0,007	Left behind
Melon	116,576	1,947	0,000	0,003	Left behind
Watermelon	4,037	3,780	0,002	0,010	Fast-growing

Sources: *Secondary Data Analysis (2023)*

Table 3 shows that 11 fruit commodities are in the fast-growing category and 12 are in the left behind category. Based on the study's results, vegetable commodities are leading to fruit commodities. However, some fruits have the potential to be developed because they have a positive rate and contribution and are of greater value than other fruits, namely star fruit, durian, water apple, papaya, and banana.

CONCLUSION

Brebes Regency's leading commodities for vegetable and fruit crops are shallot, rose apple, mango, banana, sapodilla, breadfruit, apple, melinjo, and twisted cluster bean. Commodities that have not experienced repositioning and remain leading commodities are star fruit, mango, and banana. Shallot, rose apple, sapodilla, breadfruit, apple, melinjo, and twisted cluster bean will experience a repositioning as non-leading commodities. Many potential commodities have the opportunity to become leading commodities in the future, namely welch onion, yard long bean, chili, cayenne pepper, tomato, eggplant, green bean, chayote, duku, guava, tangerine, mangosteen, pineapple, papaya, rambutan, salacca, grape, and jengkol. The pattern and structure of vegetable and fruit crops in Brebes Regency that are considered advanced and fast-growing are only shallots. Garlic, Welch onion, cabbage, yard long bean, chili, cayenne pepper, tomato, eggplant, green bean, cucumber, chayote, water spinach, melon, watermelon, star fruit, duku, durian, rose apple, tangerine, mangosteen, pineapple, papaya, banana, grape, and jengkol are in the fast-growing category, and the rest are in the lagging category. Developing leading commodities can be developed by increasing productivity through intensification, using superior varieties, controlling pests and diseases, adopting climate-friendly technology and planting methods, and increasing production factors. Providing added value to products, forming farmer groups and strengthening their roles, and developing agrotourism are efforts to maintain and increase leading commodities.

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