Caspian Journal of Environmental Sciences
Online ISSN: 1735-3866
Print ISSN: 1735-3033

Leading commodity development food crops in Jember District, Indonesia

Muhammad Firdaus*, Ahmad Sauqi, Nanda Widaninggar, Nely Supeni, Farid Wahyudi, Saiful Amin

Institut Teknologi dan Sains Mandala, Indonesia

** Corresponding author's E-mail: firdaus@stie-mandala.ac.id*

ABSTRACT

Determination of regional superior sectors and commodities is essential to accelerate regional economic development. Therefore, this study aims to: 1) determine the leading sector in Jember Regency; 2) determine the leading food commodity in this regency; 3) determine the profile of the leading commodity in it; 4) determine the leading food commodity center in the regency (5) determine the best way to develop superior commodities in it. This study uses secondary data on the Regional Gross Domestic Product (GRDP) of East Java Province and Jember Regency for the period 2017-2021 and data on the production of food commodities (rice, corn, soybeans, peanuts, cassava, and sweet potatoes) in the province and Kabupaten Jember for the period 2011–2021 from the Central Statistics Agency (BPS) in the province and BPS Jember. The analytical tools used are Location Quotient (LQ) and descriptive analysis. The results of the research show: 1) The leading sectors in Jember Regency are the Agriculture, Forestry, and Fisheries sectors; Information and Communication; Government Administration, Defense, Social Security; Education Services; and Health Services and Social Activities; 2) the leading food commodity in Jember Regency is rice; 3) Jember Regency is one of the largest rice production centers in East Java with a production of 961,981 tons. Rice productivity in Jember Regency (61.04 kw) is already higher than rice productivity in East Java (56.47 kw); 4) Rice commodity centers in Jember Regency include 21 sub-districts out of 31 sub-districts, namely Mayang, Mumbulsari, Jenggawah, Ajung, Rambi Puji, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, and Sumbersari; 5) Rice commodity development in accordance with agribusiness principles.

Keywords: Featured Commodity, Location Quotient, Rice.
Article type: Research Article.

INTRODUCTION

Economic development can support the achievement of goals or encourage changes or reforms in other areas of life. Development is carried out from the regional- to the national- level. Regional economic development is a process in which local governments and their communities manage existing resources and form a partnership pattern between local governments and the private sector to create new jobs, as well as stimulate the development of economic activities in the region (Arsyad 2016; Mustapa *et al.* 2022; Surya Suamba *et al.* 2022). Regional autonomy is one of the efforts made to make regional development effective. Regional autonomy provides output for autonomous regions that are able to develop according to their conditions. Law No. 32 of 2004 concerning Regional Government and Law no. 23 of 2004 concerning Financial Balance between the Central and Regional Governments is a form of support from the government for the development of regional economic development. The law is the basis for regions to develop their regions independently by relying more on the potential of the region. This law also provides a broader role for local governments to design regional development in accordance

Caspian Journal of Environmental Sciences, Vol. 20 No. 5 pp. 901-910 Received: May 29, 2022 Revised: Aug. 16, 2022 Accepted: Nov. 08, 2022
DOI: 10.22124/CJES.2022.6037

Publisher: University of Guilan, Iran

with the wishes of the surrounding community. Regional economic growth is basically influenced by the comparative advantage of a region, regional specialization, and the economic potential of the region, so that the utilization and development of all economic potential is a top priority that should be explored and developed in carrying out sustainable regional economic development (Syahab 2013). Comparative advantage means that a company or country has when it is able to produce an item more efficiently or better than other goods (Griffin & Ebert 2017). In contrast, competitive- or competitive- advantages are the ability obtained through the characteristics and resources of a company to have higher performance than other companies in the same industry or market. Porter (1985) formulated two types of competitive advantages of companies, namely low cost or product differentiation. Determination of national and regional superior commodities is the first step towards agricultural development based on the concept of efficiency to gain comparative and competitive advantages in the face of trade globalization (Hendayana 2003). Intense competition demands increased efficiency and effectiveness in all fields, including agriculture. Determination of regional superior sectors and commodities is essential in regional development planning. So that, development directions and strategies can be more focused on prioritizing regional potentials to accelerate regional economic development. One sector that often gets excellent attention from the government, due to its role and contribution to economic development is the agricultural sector. The development of this sector through the agribusiness system approach is carried out by integrating the upstream to downstream sub-sectors, so that, agricultural performance becomes more efficient and effective. The agribusiness system is a concept of an integrative system and consists of several subsystems. According to Firdaus (2017), the agribusiness system consists of five subsystems, namely: 1) the procurement of production facilities (upstream agroindustry); 2) the farming production subsystem; 3) the processing and industrial product subsystem of agriculture (downstream agroindustry); 4) the marketing and trade subsystem; and 5) Supporting institutional subsystems. Jember Regency is one of 38 regencies/cities in East Java Province (BPS East Java 2022), which has an area of 3,092.34 km^2 with a population of 2,550 million people in 2021 (BPS Jember 2022). As one of the autonomous regions that have the authority to organize government and development and also provide services to the community, it has broad authority to manage, plan, and optimally utilize the economic potential that can be enjoyed by all people in Jember Regency.

Area development

Regional development is a form of the relationship created between Natural Resources (SDA), Human Resources (HR), and technology for community empowerment that runs in harmony by considering the capacity (Alkadri 2001). The development of the Indonesian National Territory has the following objectives: 1) to achieve a balance between regions in terms of their growth rate; 2) to strengthen the unity of the national economy; and 3) to maintain the efficiency of national growth (Hadjisarosa 1982).

Based on the Directorate of Strategic Area Development, Directorate General of Spatial Planning, Ministry of Settlement and Regional Infrastructure (2002), the basic principles in regional development are:

1. The development of a growth center area is not only internal to the region but also the spread effect of growth that can be caused to the surrounding area, even nationally;
2. An effort to develop the region requires efforts to develop cooperation between regions and become the main requirement for the success of regional development;
3. The pattern of regional development is integral, which is the integration of the regions covered by the region through an equality approach.

In regional development, market mechanisms should also be a prerequisite for regional development planning. In regional mapping development, one development area is expected to have strategic elements such as Natural Resources, Human Resources and infrastructure that are interrelated and complementary, so that, they can be developed optimally by taking into account the nature of synergies. According to the classical economic view, it is said that economic development in areas rich in natural resources will be more advanced and the people more prosperous than in areas with poor natural resources. To a certain extent, the justification for this assumption is still acceptable, in the sense that natural resources should be seen as initial capital for development which must be further developed. Therefore, other factors are needed, some of which are raw materials, technology and human resources (Tambunan 2001). The data used as information that is very important to determine the output in the economic sector and see growth in a certain area (province/district/city) is Gross Regional Domestic Product data. With the GRDP data, it is possible to determine the leading sector in an area/region.

Leading Sector

The definition of a leading sector is usually related to a comparison, whether it is a regional, national or international comparison. In the international scope, a sector is said to be superior if the sector is able to compete with the same sector as other countries. Meanwhile, at the national level, a sector can be categorized as a leading one if in a certain area, it is able to compete with the same sector produced by other regions, both in the national and domestic markets (Tambunan 2001).

An area can have a leading sector if the region can win the competition in the same sector as other regions, so that, it can export (Suyatno 2000). The leading sector according to Tumenggung (1996), is a sector that has comparative and competitive advantages with similar sector products from other regions and provides excellent value for benefits. The leading sector also provides added value and large production, has a significant multiplier effect on other economies, and has a high demand for both local and export markets (Mawardi 1997).

The leading sector is certain to have more significant potential to grow faster than the others in an area, especially the supporting factors for the leading sector, namely capital accumulation, growth of the absorbed workforce, and technological progress. The creation of investment opportunities can also be done by empowering the potential of the leading sector owned by the region concerned (Rachbini 2001). The leading sector in an area (region) is closely related to the Gross Regional Domestic Product (GRDP) data from the area concerned. This is because the GRDP contains essential information, including looking at the output of the economic sector (the contribution of each sector) and the growth rate in an area, both provincial and district/city areas.

The ability of local governments to see sectors that have advantages/weaknesses in their area is becoming increasingly important. Sectors that have advantages have better prospects for development and are expected to encourage other sectors to develop (Tarigan 2014).

Criteria for determining leading sector

Determining the leading sector is an important thing to do, so that, it can be used as the basis for regional development planning in accordance with the era of regional autonomy where regions have the opportunity and authority to make policies that are in line with regional potential in order to accelerate regional economic development.

According to Arifin & Rachbini (2001), there are four requirements for a particular sector to become a priority sector, called:

1. The sector should produce products that have a large enough demand, so that the growth rate develops rapidly as a result of the demand effect;
2. By alterations in technology that are adopted creatively, the new production function shifts with more comprehensive capacity development;
3. There should be an increase in re-investment of the results of the production of the priority sectors, both private and government;
4. The sector should develop, so that it can give effect to other sectors.

Featured Commodities

The agricultural-based primary sector in Jember Regency needs to increase its added value to upraise the community's economy. One way that can be implemented is to develop superior agricultural commodities. Leading commodities are potential ones that are considered competitive with similar products in other areas, since, in addition to having a comparative advantage, they also have high business efficiency (Tambunan 2001). According to Setiyanto & Irawan (2016), superior commodities are mainstay commodities that have a strategic position to be developed in an area whose determination is based on various considerations both technically (soil and climatic conditions) as well as socio-economic and institutional (technological mastery, resource capabilities, people, infrastructure, and local socio-cultural conditions). Bachrein (2003) also added that the determination of superior commodities in a region which should be considered that commodities that are able to compete sustainably with the same commodities in other regions are commodities that are managed efficiently in terms of technology and socio-economics and have a comparative and competitive advantage.

Ambardi & Prihawantoro (2002) suggest that there are several characteristics of superior commodities, namely that superior commodities should be able to become the prime mover of development, which means that they have a promising contribution to increase production and income; have strong future linkages, both as leading-

and other- commodities; capable of competing with similar products from other regions in the national market in terms of product prices, production costs, service quality, and other aspects; have linkages with other regions both in terms of markets (consumers) and suppliers of raw materials. In addition, superior commodities should also be able to optimally absorb qualified labor in accordance with the scale of production; the development of superior commodities should receive various supports, such as social, cultural, information and market opportunities, institutions, development of superior commodities oriented to the preservation of resources and the environment. The leading commodity approach is based on the opinion that what needs to be developed in a region/region is to sell the products and production capabilities effectively and efficiently with the resources of the region/region to be exported and generate regional wealth and create job opportunities (Ameriyani 2014). Thus the regional/regional economy will move faster to increase people's income. Planning for the development of agricultural commodities is needed by determining the suitability of the land with the requirements for growing crops (Boix & Zinx 2008). The development of superior commodities needs to pay attention to the land availability and suitability. The development of superior commodities based on the results of the evaluation of land suitability will result in growth and production according to the land suitability class. Directions for the development of superior commodities need to be carried out, so that the development of superior commodities is more focused on potential lands. The selection of commodities to be cultivated also plays an essential role in the success of agricultural production efforts. Commodities of high value will be the top priority, however, matters relating to their marketing need to be considered. The commodities that have been selected are then the types/varieties according to the topographic and climatic conditions of the planned location (Said & Intan 2004). Leading commodities in the regional economy determine the overall economic growth of the region, in addition to those originating from the commodity in question, as well as other related sectors. The greater the activities of this sector in the region, the higher the flow of income into the region, thereby increasing the demand for goods and services produced by this and other sectors, which in turn will increase the volume of activities in other sectors. Furthermore, it will simultaneously increase regional income. Determination of a commodity as a superior regional commodity should be adjusted to the potential of Natural Resources and Human Resources owned by the region. The commodities selected as superior regional commodities are those that have high productivity and can provide added value, so that they have a positive impact on people's welfare. In addition, the determination of superior regional commodities must also consider the contribution of a commodity to economic growth and aspects of equitable development in an area (Syahroni 2005). The method used to determine the leading commodity is the Location Quotient (LQ) method, which is an indirect approach to determine whether certain types of sectors are basic or non-base sectors. This research aims to determine:

1. The leading sector in Jember Regency,
2. The leading food commodities in Jember Regency,
3. The profile of leading commodities in Jember Regency,
4. The centre of superior food commodities in Jember Regency,
5. The direction of development of superior commodities in Jember Regency and identify the obstacles.

In addition, this research is expected to be useful as:

1. Input material for stakeholders (especially farmers and marketers) who are engaged in food commodities in Jember Regency;
2. Input material for the Jember Regency Government, especially the Horticulture and Plantation Office of Jember Regency, in an effort to develop superior food commodities in accordance with the potential of each sub-district;
3. References for further research, especially those related to the development of food agribusiness.

METHODS

This study was conducted in Jember Regency. Its object was determined purposively, given that this regency has a high potential for the development of the agricultural sector, especially food commodities and horticulture. The data used in this research is secondary data. Secondary data are those collected by other parties, and investigators can search for these data sources through other data sources related to the data they want to find (Kuncoro 2014; Sugiyono 2016). Secondary data on rice field food commodities for 2011-2021 were obtained from BPS East Java (East Java in Figs.) and BPS Jember (Jember in Figs.). Statistical data were taken in the form of food crop production data for the period 2011-2021. Location Quotient (LQ) is a comparison between the role of an

economic sector in an area to the magnitude of the role of the same economic sector nationally or in comparison to an area with a larger administrative scope (Tarigan 2014). LQ analysis is an analysis used to determine the extent of specialization of economic sectors in an area that utilizes the base sector or the leading sector. The LQ method uses the relative concentration or degree of specialization of economic activities through a comparative approach and generally to obtain information on the determination of the leading sector or commodity as the leading sector. For land-based agricultural commodities (food crops, horticulture, plantation and forestry sub-sectors), the calculation is based on production, while for those that are not land-based (livestock sub-sector), then the basis for the calculation uses the number or population (Hendayana 2003).

RESULTS AND DISCUSSION

Leading Sector in Jember Regency

A sector can be categorized as a leading sector if the sector in the region is able to compete with the same sector produced by other regions, either in the national or domestic market. This means that an area will have a superior sector if the region can win the competition in the same sector as other regions. The leading sector is reflected in the Gross Regional Domestic Product (GRDP) data from the region concerned. The following is the average GRDP and average LQ in Jember Regency in the 2017-2021 period.

Table 1. Average GRDP of East Java and GRDP of Jember for the Period 2017-2021, 2010 Constant Prices

BUSINESS FIELD/SECTOR	Average GRDP	Average LQ
A. Agriculture, Forestry, Fisheries	13.902.103,92	**2,54**
B. Mining and Quarry	2.488.533,48	0,94
C. Processing Industry	11.085.303,68	0,71
D. Electricity and Gas Procurement	28.682,34	0,19
E. Water Supply, Waste Management, Waste	35.440,08	0,68
F. Construction	3.719.426,54	0,77
G. Trade. Large and Retail, Rep. Cars and Spd Motors	7.038.194,98	0,73
H. Transport and Trade	844.184,04	0,57
I. Accommodation and Drinks	1.179.626,14	0,42
J. Information and Communication	4.264.153,08	**1,32**
K. Financial Services and Insurance	1.160.174,52	0,87
L. Real Estate	771.025,08	0,84
M N. Company Services	175.014,44	0,43
O. Adm. Government, Defense, Social Security	1.809.888,22	**1,61**
P. Education Services	2.835.376,82	**2,00**
Q. Health Services and Social Activities	425.751,34	**1,15**
R, S, T, U. Other Services	588.880,18	0,82
TOTAL	**52.351.758,88**	**16,57**

From Table 1, it appears that there are five dominant and leading sectors in the formation of GRDP of Jember Regency, called: 1) Agriculture, Forestry, and Fisheries; 2) Information and Communication; 3) Government Administration, Defense, Social Security; 4) Education Services; and 5) Health Services and Social Activities. The Agriculture, Forestry and Fisheries sector has the most considerable LQ value. This sector should always be prioritized for development programs in Jember Regency, since land resources in this regency are natural resources that have the potential to be developed, also since it is the livelihood of the majority of the population in the regency. The Agriculture, Forestry and Fisheries sectors will be able to encourage other sectors and realize forward linkages, such as the agricultural product processing industry (downstream agroindustry) and backward

linkages, such as agricultural infrastructure (dams, irrigation networks), agricultural production facilities industry in the form of seed/seedling industry, fertilizer and pesticide industry, as well as agricultural equipment and machinery industry (upstream agroindustry). The resources owned by the people of Indonesia (including Jember Regency) are human resources (energy, thoughts, time, values) and Natural Resources (land, biodiversity, tropical agro-climate). These two resources are the Indonesia's comparative advantages. This means that the Indonesia's economic development should be based on the utilization of Human- and Natural- Resources. Only with people-based economic development is it possible for the population, socio-cultural diversity of the community and natural resources to become the subject and capital of economic development (Firdaus 2017).

Agricultural leading commodities

Determination of superior commodities in a region becomes a necessity given that these commodities are those that are able to compete sustainably with the same commodities in other regions. Leading commodities are mainstays that have a strategic position to be developed in an area, their determination is based on various considerations, both technically (soil and climate conditions) as well as socio-economic and institutional (technological mastery, human resource capabilities, infrastructure, and socio-cultural conditions). Also, the commodities being cultivated must be technologically and socio-economically efficient and have comparative and competitive advantages. Table 2 depicts the results of the calculation LQ in Jember Regency to determine leading agricultural commodities according to their sub-sectors.

Table 2. Calculation of LQ of Food Crops Commodities in Jember Regency, 2011-2021.

No.	Subsector/Commodity	Value LQ	Information
A.	**Food Crops**		
1.	Rice	**1,030**	Featured
2.	Corn	0,995	Non featured
3.	Soybean	0,840	Non featured
4.	Peanuts	0,249	Non featured
5.	Cassava	0,175	Non featured
6.	Sweet potato	0,799	Non featured

Source. Calculation results (Jember Regency in Figures, East Java Province in Figures, 2011 to 2021).

Profile of rice commodities in Jember

Jember Regency consists of 31 sub-districts with 248 villages. Land use is dominated by cultivation functions, including: 1) Land for agriculture by 46%; 2) for settlement by 10%; 3) for forest by 21%; and 4) others by 23%. Judging from the topographic conditions indicated by the slope of the land or elevation, most of Jember Regency (36.60%) is in a flat area with a land slope of 02%. So this area is suitable for urban settlement and seasonal crop farming activities. The total area of rice fields in Jember Regency is 86,568.18 hectares. East Java Province is one of the main producers of food crop commodities, especially rice and corn. In 2021, the province rice production will reach 9.91 million tons with productivity of 56.47 quintals per hectare (BPS East Java 2022). Jember Regency is one of the largest rice production centers in East Java, with a production of 961,981 tons (BPS Jember 2022).
Production of a commodity is determined by land area and productivity. The following table shows data on the land area (ha), productivity (kw), and production (tons) of rice commodities in Jember Regency. Table 3 depicts the Land Area, Productivity, and Production of Rice Crops in Jember Regency in 2010-2021. Table 3 shows that the land area in Jember Regency is relatively fixed, as is its productivity. As a result, production is also fixed. In theory, efforts to increase rice production can be made by expanding paddy fields and or increasing productivity. However, due to limited land, which is indicated by the area of land that is always constant from year to year, efforts to increase rice production can only be made by increasing productivity. This is in line with Firdaus (2017), which states that in the long term, technology will change (technological advances), so that productivity increases. However, efforts to increase productivity are not an easy thing. It takes hard work and research to make it happen. Moreover, rice productivity in Jember Regency (61.04 kw) is already higher than rice productivity in East Java (56.47 kw).

Determination of Rice Plant Centers in Jember Regency

All sub-districts (31 of 31 sub-districts) in Jember Regency are planted with rice. However, there are some areas that can be planted twice or even three times (all year). So, there are some areas that become centers of rice production. Table 4 shows the central sub-districts for the rice crop development.

Table 3. Land Area, Productivity, and Production of Rice Crops in Jember Regency 2010-2021.

Year	Land Area (ha)	Productivity (kw)	Production (tons)
2010	153,696.00	54.98	845,094.50
2011	155,126.00	53.50	830,000.00
2012	158,568.00	61.18	970,096.00
2013	162,618.60	57.19	930,027.00
2014	164,307.00	59.55	978,373.00
2015	164,656.00	61.03	1.004,898.00
2016	166,178.90	59.37	986,653.00
2017	162,360.00	59.20	960,602.00
2018	164,371.00	59.90	984,201.00
2019	157,344.00	63.40	997,838.00
2020	160,347.00	61.86	991,892.00
2021	157,596.00	61.04	961,977.00
Total	**1.927,168.50**	**712.20**	**11,441,651.50**
Average	**160,597.38**	**59.35**	**953,470.96**

Source: BPS Jember (2022).

Table 4. District of Rice Crop Development Center in Jember Regency, 2011-2021

No.	Districts	2011–2021	No.	Districts	2011 – 2021
1	Kencong	0.98	17	Sumberbaru	**1.07**
2	Gumukmas	0.87	18	Tanggul	**1.06**
3	Puger	0.94	19	Bangsalsari	**1.02**
4	Wuluhan	0.84	20	Panti	**1.04**
5	Ambulu	0.85	21	Sukorambi	**1.06**
6	Tempurejo	0.72	22	Arjasa	0.99
7	Silo	0.95	23	Pakusari	**1.05**
8	Mayang	**1.00**	24	Kalisat	**1.02**
9	Mumbulsari	**1.06**	25	Ledokombo	**1.02**
10	Jenggawah	**1.00**	26	Sumberjambe	**1.02**
11	Ajung	**1.04**	27	Sukowono	**1.09**
12	Rambipuji	**1.05**	28	Jelbuk	**1.00**
13	Balung	**0.99**	29	Kaliwates	**1.08**
14	Umbulsari	**1.07**	30	Sumbersari	**1.06**
15	Semboro	**1.07**	31	Patrang	**0.99**
16	Jombang	**1.06**			
	Total	**16**		**Total**	**15**

Based on Table 4, the rice commodity centers in Jember Regency include 21 sub-districts out of 31 sub-districts, called Mayang, Mumbulsari, Jenggawah, Ajung, Rambi Puji, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, and Sumbersari.

Rice commodity development in Jember Regency

Rice commodity is one indicator of Indonesia's economic stability. This means that the price of rice is a reflection of Indonesia's ability to manage its economy. Rice production management has an influence on consumption

management and has an impact on other sectors. Jember's position as a rice warehouse in East Java plays a role in controlling rice stock resilience. Rice production in Jember Regency in 2021 will reach 961,977.00 (Table 3). Currently, the population of Jember reaches 2.550 million people. The current consumption of rice is 123.02 kg/year/capita, while the demand for rice in Jember Regency is 3.14 million tons. It appears that Jember Regency is experiencing a rice production deficit, so efforts are needed to increase rice production to increase food security. Policies that should be carried out by the Jember Regency Government to improve food security include: 1) Intensification of rice farming; 2) Synergy between farmers, entrepreneurs and the government; 3) Strengthening regional food policies that favor farmers; 4) Revitalizing facilities and infrastructure; 5) Product differentiation. Meanwhile, the specific directions for the development of rice commodities are as follows:

a) Procurement of agricultural production facilities, seeds/seeds, fertilizers, pesticides, utilization of production equipment and agricultural machinery (alsintan) production (tractors and soil processing equipment, planting equipment, plant maintenance equipment);
b) Utilization of technology through the five farming programs in production activities that support increased production and productivity of rice, including: using superior seeds, good soil management, selection of complete and good fertilizers, pest and disease control, good irrigation/irrigation;
c) Utilization of post-harvest technology to avoid loss/shrinkage and decrease in yield quality, for example using machinery for harvesting (reaper), thresher (thresher), drying (dryer), warehousing/storage and milling/Rice Milling Unit (RMU) and development processed rice products, both primary processing activities (rice flour) and secondary processing in the form of various types of food made from rice;
d) Marketing of primary products (rice), by-products in the form of bran, straw and processed products by utilizing marketing networks around the area;
e) Increasing the capital capacity for farmers to be able to provide agricultural production facilities, production and postharvest activities in a timely manner to increase;
f) Production and quality of products through cooperation with banks and financial institutions on conditions that benefit farmers.

It appears that the direction of rice commodity development is in line with the concept of agribusiness.

CONCLUSION

The conclusions that can be drawn from the results of this study are:

1. The leading sectors in Jember Regency are the Agriculture, Forestry, and Fisheries sectors; Information and Communication; Government Administration, Defense, Social Security; and Education Services, which are the dominant and leading sectors in the formation of the GRDP of Jember Regency,
2. The leading food commodities in Jember Regency are rice commodities,
3. Jember Regency is one of East Java's largest rice production centers with a production of 961,981 tons. The results showed that the productivity of rice in Jember (61.04 kw) was higher than the productivity of rice in East Java (56.47 kw).
4. Rice commodity centers in Jember Regency include 21 sub-districts out of 31 sub-districts, called Mayang, Mumbulsari, Jenggawah, Ajung, Rambi Puji, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, and Sumbersari.
5. Rice commodity development has been carried out in accordance with agribusiness principles.

The suggestions that can be recommended are as follows:

1. The local government, especially the Office of Horticultural Food Crops and Plantations, should pay attention to the rice commodity, since it is a plant that is able to provide food both regionally and nationally;
2. The District Government, through the Office of Horticultural Food Crops and Plantations, should also pay more attention to rice commodity varieties capable of providing optimal results to farmers, so that, productivity and marketing can be increased, and the ideals of increasing farmers' welfare can be achieved.

REFERENCES

Alkadri, Muchdie *et al.* 2001, Three pillars of Regional Development. Agency for the Assessment and Application of Technology (BPPT), Indonesia [In Indonesian].

Ambardi Urbanus, M & Dan Prihawantoro, S 2002. Regional development and regional autonomy concept study and development. Technology Assessment and Application Agency (BPPT). Jakarta, ISBN: 9793138017 & 979313801 [In Indonesian].

Ameriyani, P 2014, Planning for the development of the marine fisheries sub-sector in five sub-districts in Rembang District. Journal of Economics Development Analysis, 3: 225-234 [In Indonesian].

Arifin, BdDA & J. Rachbini, J 2001. Political economy and public policy. PT Grasindo. Jakarta [In Indonesian].

Arsyad, L 2016, Introduction to regional economic planning and development. Yogyakarta: BPFE-UGM. [In Indonesian].

Boix LR, & Zinck, JA 2008, Land-use planning in the Chaco Plain (Burruyacu, Argentina). Part 1: Evaluating land-use options to support crop diversification in an agricultural frontier area using physical land evaluation. *Environmental Management*, 42: 1043-1063.

BPS 2022, Jember Regency in figures for the years 2011-2021. https://jemberkab. bps.go.id/publication.html. Diakses July, 08 2022 [In Indonesian].

BPS 2022, Gross domestic product GRDP of Jember Regency by expenditure 2017-2021. Available at: July 08, 2022 [In Indonesian].

BPS 2022, East Java province gross domestic product GRDP quarterly by business field 2017-2021. https://jatim.bps.go.id/ publication/ 2022/07/08/0490f0168593f15fbeeaf498/produk-domestik-regional-bruto-provinsi-jawa-timur-triwulanan-menurut-lapangan-usaha-2017-2021.html. Diakses July 08, 2022 [In Indonesian].

Darmawansyah, 2003, Development of leading commodities as regional economic bases. MSc. Dissertation of IPB. Bogor. [In Indonesian].

Hadjisarosa, P 1982, The basic concept of regional development in Indonesia. Public Works Publishing Agency, Jakarta [In Indonesian].

Firdaus, M 2009, Determination of leading agricultural commodities in Jember Regency. *Journal of Science Education and Practice*, Vol. 3 No. 1, March 1[In Indonesian].

Firdaus, M 2017, Agribusiness management. Indonesian Script Earth Publisher, Jakarta [In Indonesian].

Hadjisarosa, P 1982, Basic concept of regional development in Indonesia. Public Works Department Publisher, Jakarta [In Indonesian].

Hendayana, R 2003, Application of location quotient (LQ) method in determining national leading commodities. Agricultural Informatics, 12:1-21 (In Indonesian), http://www.litbang.pertanian. go.id/informatika.

Hood, R 1998, Economic analysis: A Location Quotient. Primer, Principal Sun Region Associates, Inc.

Griffin, RW & Dan Ebert, RJ 2017, Business essentials 8th Ed. Pearson Education, Toronto.

Kuncoro, M 2014, Quantitative Method: YKPN. College of Management Sciences. Yogyakarta [In Indonesian].

Mawardi, I 1997, Eastern Indonesia's competitiveness and integrated economic development. Institute for Research, Education, Economic & Social Information. Jakarta [In Indonesian].

Mustapa, I, Sumarmo, B, Setiawan, B & Pramoedyo, H 2022, Strategies for strengthening the rural economic base in stimulating the growth of Bone Bolango Regency. *Caspian Journal of Environmental Sciences*, [In Press].

Porter, ME 1985, Competitive advantage: Creating and sustaining superior performance (1st ed.), NY: Free Press, New York.

Rachbini, DJ 2001, Economic Development & Human Resources. Gramedia Widiasarana Indonesia, Jakarta [In Indonesian].

Sa'id, GdI, & Harizt, A 2004, Agribusiness management. Ghalia Indonesia Publisher, Jakarta (In Indonesian).

Setiyanto, AdBI 2015, Region-Based Development: Theoretical basis, operational concepts and their implementation in the agricultural sector. Agricultural Research and Development, Jakarta [In Indonesian].

Sugiyono, PD 2016, Quantitative, qualitative and R&D research methods. PT Alphabet, Bandung, 334 p. [In Indonesian].

Suyatno, PD 2000, Economic base analysis of regional economic growth level ii Wonogiri: Facing the Implementation of Law no. 22/1999 and Law no. 25/1999. *Journal of Development Economics*, Vol. 1, No. 2, pp. 144-159 [In Indonesian].

Surakarta: UMS. Syahab, A & Setiawan, BdS 2013, Analysis of the Development of Leading Food Crops Commodities in Sumbawa Regency. *Agrise*, Volume 13, No. 2, May 2013 [In Indonesian].

Surya Suamba, IB, Anom Wiryasa, NM, Acwin Dwijendra, NK, Agung Diasana Putra, IDG 2022, Characteristics and deviation patterns of agricultural land use in tourism area of Canggu, Bali, Indonesia. *Caspian Journal of Environmental Sciences*, 20: 423-430.

Syahroni, M 2005, Analysis of agribusiness leading commodity development strategy in Dompu Regency, West Nusa Tenggara Province. MSc. Dissertation of IPB, Bogor [In Indonesian].

Tambunan, 2001, Indonesian Economy Theory and Empirical Findings. Indonesian Ghalia, Jakarta [In Indonesian].

Tarigan, R 2014, Regional economics theory and application, Revised Edition of the Seventh Print. PT Bumi Aksara Jakarta [In Indonesian].

Tumenggung, S 1996, ntegrated Economic Development Ideas and Policies (Eastern Indonesia). Directorate of Urban and Rural Planning, Director General of Human Settlements, Department of Public Works (PU). Jakarta [In Indonesian].

Bibliographic information of this paper for citing:

Firdaus, M, Sauqi, A, Widaninggar, N, Supeni, N, Wahyudi, F, Amin, S 2022, Leading commodity development food crops in Jember District, Indonesia. Caspian Journal of Environmental Sciences, 20: 901-910.