



MAPPING OF FOOD CROPS COMMODITY IN SIDOARJO REGENCY

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Abstract

first step towards agricultural development that is based on the concept of efficiency to gain a comparative and competitive advantage in the face of competition both at regional and global levels. The purpose of this study is to determine the spastial distribution of food commodities and recommend superior food crop commodities in Sidoarjo Regency. Geographic Information System program so that the distribution of food crop commodities in Sidoarjo Regency is obtained. The data analysis in this study includes the identification of the potential and characteristics of the basic commodity agribusiness which is carried out to determine the potential of the base commodity using the Location Quotient (LQ) method. The sub-district which is considered superior for food crop commodities is Prambon District with its food crops, namely rice, corn, green beans and soybeans. The LQ value for food crops is one basic commodity in Sidoarjo Regency, namely is paddy.

Keywords: Distribution, Food Crops, GIS, Location Quotient, Map

A. Introduction

In the era of regional autonomy, economic development faces various challenges, both from within the region and external factors, such as inequality and globalization issues. The issue of globalization requires each region to be able to compete at home and abroad. Inequality and globalization have implications for provinces and regencies/cities, to carry out the acceleration of regional economic development in a focused manner through the development of regions and their flagship products. This acceleration of development aims to ensure that regions do not lag behind in free market competition, while still paying attention to the problem of reducing inequality. Therefore, all actors have a role in filling regional economic development and must be able to cooperate through the form of managing linkages between sectors, between programs, between actors, and between regions (Jusuf, 2006).

The process of agricultural development is oriented towards increased production, in its development it needs to be reoriented with changes in its strategic environment into a development process with a competitive agribusiness perspective and systematically designed to lead to just and equitable welfare. Although there are changes in orientation and insight, the goals of agricultural development are consistently directed to the realization of the national development mandate, namely to increase the income and standard of living of fishermen-farmers, expand employment and business opportunities, as well as meet demand and expand

markets (both domestic and foreign markets). overseas). This is done through the development of advanced, efficient and resilient agricultural postures that are increasingly capable of increased and diversified yields, increased the quality and degree of production processed, and supported regional development. This is also unraveled in its first mission "to develop an agro-based modern East Java economy (Kementerian Perindustrian, 2020).

Regional economic growth and the success of a region's development can be measured using the Gross Domestic Product (GDP). Information on development outcomes can be used to determine development policies in an area (Ratag et al, 2016). We all know that almost all food production and most of the production of plantation, livestock and fishery products are the result of the hard work of farmers, ranchers and fishermen who rely on family farm on small lands, which are supported by human resources and science and technology that are still lagging behind. Such structural conditions have limited the ability of farmers to access production facilities and the opportunity to obtain the synergies they need to develop.

The determination of superior commodities both nationally and regionally is the first step towards agricultural development that is based on the concept of efficiency to gain comparative and competitive advantage in the face of competition at both regional and global levels (Hendayana, 2003) Steps towards efficiency can be taken by developed commodities that have a comparative advantage both in terms of supply and demand. From the supply side, superior commodities are characterized by superiority in their growth in biophysical, technological and socio-economic conditions of farmers in an area. The diversity of food crops available in each district in each sub-district has differences from one area to another. This is influenced by climate, altitude and different land processing techniques, so that the potential for food crops from one sub-district to another will also be different. Each sub-district has the opportunity and opportunity to develop the potential of its commodities in accordance with the conditions owned by the sub-district (Ariyanto et al, 2017).

The development of the Sidoarjo Regency area as an industrial and trade area is one of the answers to the regional economic development agenda. It is undeniable that this attracts population migration from outside the region to invest, which of course increases the number of settlements, offices, factories, as well as infrastructure and other supporting facilities for activities. This of course has an impact on reducing the area of agricultural production land which has an impact on food supply activities which are an important agenda in an effort to meet the food needs of the entire population in accordance with nutritional requirements in the midst of a very dynamic population growth condition. The population growth rate in Sidoarjo Regency is 2.21 percent (BKP Sidoarjo Regency, 2013). With a fairly rapid growth rate, coupled with the large rate of land conversion, which makes agricultural land increasingly displaced, causes limitations in the ability to use natural resources and increases the risk of food insecurity. The contribution of the agricultural sector continues to decline from year to year. so that there is a need for development in each sub-sector of agriculture. The first step for the region to create new growth in the area is to find out the potential of leading agricultural commodities, especially in this study, namely food crop agriculture. The food crops sub-sector as part of the agricultural sector has an important role in regional economic growth.

The purpose of this study is to determine the spastial distribution of food commodities and recommend superior food crop commodities in Sidoarjo Regency with the Geographic Information System program so that the distribution of food crop commodities in Sidoarjo Regency is obtained.

B. Methodology

1. Research Design

The type of research is descriptive quantitative, which describes the data on food crop commodities in every sub-district in Sidoarjo Regency. Raymond (2019) Mapping was carried out using ArcGIS software so that a map of the distribution of food crop commodities was obtained. From the map, it can be analyzed what commodities are superior to plants in Sidoarjo Regency.

2. Instruments

The implementation stages carried out in this research include surveys and mapping. Survey and mapping are stages to obtain information on commodity potential and agribusiness development. Survey activities are carried out by conducted interviews with stakeholders related to agribusiness activities.

3. Technique of Data Analysis

The data analysis in this study includes the identification of the potential and characteristics of the basic commodity agribusiness. The study was conducted to determine the potential of the base commodity using the Location Quotient (LQ) method. Hajeri et al (2015) explained that the LQ analysis was carried out on data obtained from secondary data, namely food plant production data so that information on basic commodities in Sidoarjo Regency was obtained.

$$LQ = \frac{X_{ij} / X_i}{X_{.j} / X_{..}}$$

Dimana:

- X_{ij} : the degree of activity to - j in the area to - i
- X_i : activity total in the area to - i
- X_j : activity total to - j in all regions
- X : total area activity degree

The measurement criteria for the resulting LQ value refer to the criteria proposed by Bendavid-Val (1991) as follows:

- 1) $LQ > 1$, it means that the level of specialization of certain activities at the sub-district level is greater than the same activity at the district level.
- 2) $LQ < 1$, means that the level of specialization of certain activities at the sub-district level is smaller than the same activity at the district level.
- 3) $LQ = 1$, means that the level of specialization of certain activities at the sub-district level is the same as from the same activity at the district level.

The basic commodity information based on the results of the LQ analysis is then identified with the agribusiness system for each commodity. Identification of the agribusiness system using descriptive methods. The analysis was carried out on the data obtained from primary data (survey) and secondary data in order to obtain information on the characteristics of local food agribusiness in Sidoarjo Regency. Based on the SWOT matrix, the general strategy that needs to be carried out in agribusiness development in Sidoarjo Regency.

C. Findings and Discussion

Production of food crops in Sidoarjo Regency includes rice, corn, cassava, green beans and soybeans. The potential of food crop commodities is shown in Table 1.

Table 1. Potential of food crop commodities in Sidoarjo Regency

No	District	Paddy	Corn	Cassava	Mung bean	Soya Bean	Total
1	Sidoarjo	38.320,50	-	-	58,00	-	38.378,50
2	Buduran	69.808,64	-	-	-	-	69.808,64
3	Candi	102.097,42	-	-	2.299,64	-	104.397,06
4	Porong	67.732,42	-	-	2,843,10	-	70.575,52
5	Krembung	84.711,62	1.841,00	-	-	-	86.552,62
6	Tulangan	114.296,31	102,00	-	5.377,40	-	119.775,71
7	Tanggulangin	119.431,80	-	-	3.251,43	-	122.683,23
8	Jabon	162.408,75	-	-	-	-	162.408,75
9	Krian	144.816,00	170,00	-	170,00	1.358,10	146.518,10
10	Balongbendo	117.449,00	6,166,00	-	-	1.028,30	124.643,30

No	District	Paddy	Corn	Cassava	Mung bean	Soya Bean	Total
11	Wonoayu	159.210,00	-	-	3.474,54	1.581,59	164.266,13
12	Tarik	188.254,70	2.286,00	-	2.968,00	5.274,39	198.783,09
13	Prambon	129.176,26	4.805,00	-	1.324,44	3.052,45	138.358,14
14	Taman	97.986,08	-	-	-	-	97.986,08
15	Waru	10.363,00	270,00	-	-	-	10.633,00
16	Gedangan	95.258,15	72,00	-	-	-	95.443,00
17	Sedati	91.221,15	-	-	-	-	91.221,15
18	Sukodono	179.958,75	-	-	-	-	180.868,88
	Jumlah	1.972.500,54	15.712,00	-	22.789,68	12.294,83	2.023.297

Source : BPS Sidoarjo Regency, 2019

The highest productivity of rice in the study area is between 10,363 tons in Tarik district. The lowest productivity was achieved in Waru District, while the highest was in Tarik District. The difference in productivity is caused by differences in the level of land fertility, the quality of the seeds planted and the technological innovations applied.

In the food crop sector, Sidoarjo Regency is one of the areas that become the basis for rice and green beans, this condition can be interpreted that Sidoarjo Regency is one of the areas that support food needs in East Java. After knowing the base commodity at the provincial level, then further analysis is carried out to determine the distribution of the base commodity in each sub-district. The results of the Location Quotient (LQ) analysis of food crops in Sidoarjo Regency based on the commodity production results of each sub-district are shown in Table 2, while information on the distribution of basic commodities is shown in Figure 1.

Table 2. LQ values for food crops in Sidoarjo Regency

No	District	Paddy	Corn	Cassava	Mung bean	Soya Bean
1	Sidoarjo	1,02	0,00	0,00	0,13	0,00
2	Buduran	1,03	0,00	0,00	0,00	0,00
3	Candi	1,00	0,00	0,00	1,96	0,00
4	Porong	0,98	0,00	0,00	3,58	0,00
5	Krembung	1,00	2,74	0,00	0,00	0,00
6	Tulangan	0,98	0,11	0,00	3,99	0,00
7	Tanggulangin	1,00	0,00	0,00	2,35	0,00
8	Jabon	1,03	0,00	0,00	0,00	0,00
9	Krian	1,01	0,15	0,00	0,11	1,53
10	Balongsendo	0,97	6,37	0,00	0,00	1,36
11	Wonoayu	0,99	0,00	0,00	1,88	1,58
12	Tarik	0,97	1,48	0,00	1,33	4,37
13	Prambon	0,96	4,47	0,00	0,85	3,63
14	Taman	1,03	0,00	0,00	0,00	0,00

No	Distric	Paddy	Corn	Cassava	Mung bean	Soya Bean
15	Waru	1,00	3,27	0,00	0,00	0,00
16	Gedangan	1,02	0,10	0,00	0,11	0,00
17	Sedati	1,03	0,00	0,00	0,00	0,00
18	Sukodono	1,02	0,00	0,00	0,44	0,00

The results of the LQ analysis as shown in the table above obtained information that there are several commodities that are the basis in Sidoarjo Regency, namely rice, corn, green beans, and soybeans. It can be said that the rice and mung bean commodities in Sidoarjo Regency have been able to meet their own needs and can even be exported to other regencies in East Java, while corn and soybeans are only able to meet the needs in the Sidoarjo Regency area.

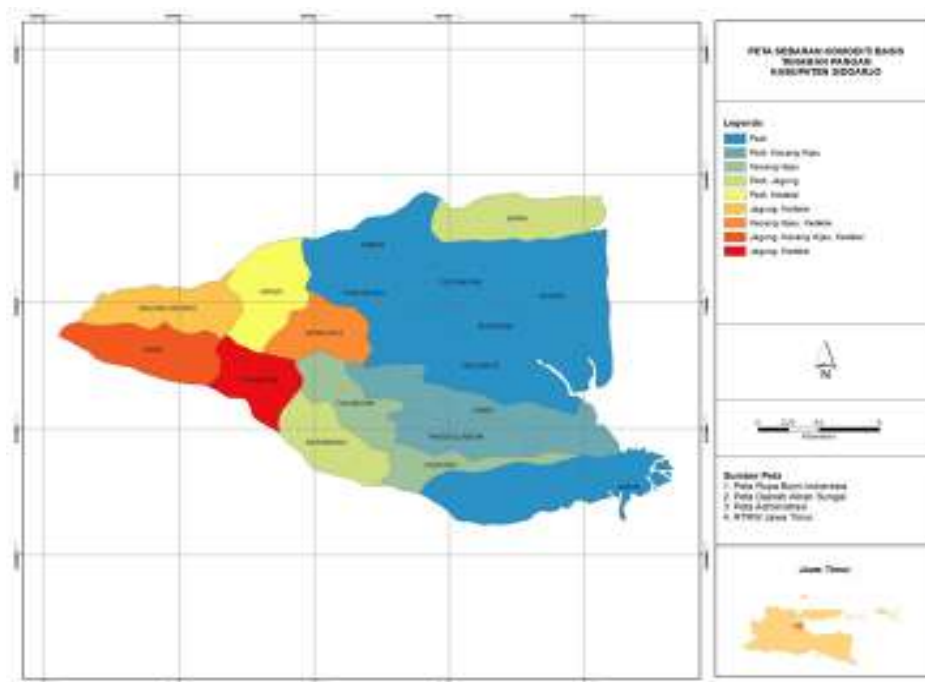


Figure 1. Map of distribution of food crop base commodities in Sidoarjo Regency

Based on the LQ value for food crops, one basic commodity in Sidoarjo Regency is lowland rice. Related to the development of commodity agribusiness, strategic issues that can be formulated from the results of extracting data (information) involving the relevant agencies (agriculture, plantations, industry and Bappeda), RPJMD document and RTRW document are presented as a SWOT analysis matrix. The EFE matrix describes external strategic factors in the form of opportunities and threats for the development of superior food crop commodities. The results of the EFE analysis describe the extent to which external strategic factors influence the development of commodities. Andreas et al (2020) the weight and rating values obtained are based on the results of interviews with five informants. The weight assessment is a calculation of the average respondent's assessment of all external strategic factors. Rating is the respondent's assessment in measuring how much influence these factors have on commodity development. The EFE matrix presents the results of the analysis of external strategic factors, which are divided into four groups of opportunities and six external environmental threats which are described in Figure 2.

Based on the SWOT matrix, the general strategy that needs to be carried out in agribusiness development in Sidoarjo Regency is to maintain productive land zoning while stabilizing land productivity through the pattern of planting sugar cane/lowland rice – rice paddy/mung bean, then processing the product into more valuable products through the empowerment of producer institutions. and participation of agricultural industry institutions as well as product standardization. Institutional strengthening that is built requires regulations or enforcement of existing regulations, even regulations for the protection of land and its components of supporting facilities. Sugarcane processing waste into sugar can be utilized through existing technology and

is carried out by owner farmers or tenant farmers, accompanied by experts, in order to stabilize productivity through a corporate social responsibility scheme.

Agro-industry that can be developed on the existing base commodity in Sidoarjo Regency with reference to the above strategy is the development of the rice industry and/or processing it into rice flour, processing mung bean in support of the food industry made from mung bean flour. To achieve a sustainable agro-industry, it should be done through the empowerment of producer institutions.

	Strengths	Weaknesses
	<ol style="list-style-type: none"> 1. A relatively large area of land is available for the development of food crops 2. Policies between the development of food and sugarcane commodities have been implemented properly 3. Territorial land especially rice fields that do not meet the requirements for the development of the two commodities are used for green beans 4. Availability of irrigation network on land 	<ol style="list-style-type: none"> 1. The regulation of trade in rice, green beans and sugar has not been regulated 2. The zoning of land for the development of food and plantation commodities has not been regulated 3. The quality of food plant products has not been standardized
Opportunities	Strategy SO	Strategy WO
<ol style="list-style-type: none"> 1. Become a trade center supporter 2. Become a processing and trading center 3. Marketing efficiency can be improved. 4. The emergence of various products made from green beans and synthetic sugar 	<ol style="list-style-type: none"> 1. Increasing the institutional role of producers to become business-oriented agro-industry 2. Increasing the role of institutional builder 3. Improve product processing into value products such as flour 	<ol style="list-style-type: none"> 1. Preparation of regulations that support the RTRW by highlighting supporting agro-industrial areas in the long term 2. Product standardization 3. Socialization of product use according to market share
Threats	Strategy SA	Strategy WA
<ol style="list-style-type: none"> 1. Land conversion 2. The threat of land reduction due to the Lapindo Mud disaster has not been handled completely 3. Price competition due to supply of products from other regions 4. Water sources contaminated with residential waste or Lapindo gas intrusion and local heating 	<ol style="list-style-type: none"> 1. Policy on land conversion and sustainable land needs to be enforced as stated in Law 14 of 2011 2. Preparation of regional regulations that protect basic products, especially those related to HPP 3. Socialization of Green Economy-oriented development 	<ol style="list-style-type: none"> 1. Tightening the permit for land use change 2. Utilizing potential resources that can be used to increase and maintain land productivity 3. Improve the skills of producers in processing more valuable products

Figure 2. SWOT analysis matrix of food crop commodity development in Sidoarjo Regency

D. Conclusion

The sub-district which is classified as superior for food crop commodities is Prambon District where this sub-district has the most superior food crop commodities, namely rice, corn, green beans and soybeans. The food crops is one basic commodity in Sidoarjo Regency, namely rice.

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