

LOCATION QUOTIENT (LQ) OF CABBAGE COMMODITY (*Brassicca oleracea*) IN NORTHERN SUMATRA PROVINCE

Vanny Annysha Sudana^{1*}, Cut Gustiana², and Rozalina³

^{1,2,3} Department of Agribusiness, Faculty of Agriculture, Samudra University

Email: vannyannyshas@gmail.com

Corresponding Author

DOI: 10.15408/aj.v18i1.38015

Abstract

This research aims to determine the location of the base of cabbage plants in districts/cities in North Sumatra Province. The data collection method is based on secondary data obtained from the Central Statistics Agency. The research design used in this research is quantitative descriptive. For the location of the cabbage plant base in North Sumatra Province, Location Quotient (LQ) analysis was used. The data used is Cabbage Crop Production in North Sumatra Province in 2018 - 2022. The results of this research show that 4 districts have potential for cabbage production, namely Samosir District, Simalungun District, Karo District, and Humbang Hasundutan District. Several regencies/cities that do not have potential for cabbage production are Nias Regency, Central Tapanuli Regency, Labuhanbatu Regency, Asahan Regency, Deli Serdang Regency, Langkat Regency, South Nias Regency, Serdang Bedagai Regency, Batu Bara Regency, Padang Lawas Regency, South Labuhanbatu Regency, North Labuhanbatu Regency, North Nias Regency, West Nias Regency, Sibolga City, Tanjungbalai City, Pematangsiantar City, Tebing Tinggi City, Medan City, Binjai City, and Gunungsitoli City. Several regencies have opportunities for cabbage production, namely Dairi Regency, North Tapanuli Regency, Pakpak Bharat Regency, Mandailing Natal Regency, Padang Sidempuan City, South Tapanuli Regency, Toba Regency, and North Padang Lawas Regency.

Keywords: Location Quotient, *Brassicca oleracea*, Base and Non-Base

INTRODUCTION

The agricultural sector is one of the mainstay sectors in national economic development. Its role is as a contributor to Gross Domestic Product, providing a source of foreign exchange through exports, providing food and industrial raw materials, alleviating poverty, providing employment opportunities, and improving people's income. The Indonesian agricultural sector consists of several sub-sectors, namely the food crops, horticulture, livestock, and plantation sub-sectors. The Indonesian agricultural sector is comprised of several key sub-sectors, including food crops, horticulture, livestock, and plantations (Sihotang *et al*, 2019).

Horticulture is everything related to fruit, vegetables, plant-based medicinal materials, and floriculture, including mushrooms, moss, and aquatic plants that function as vegetables, plant-based medicinal materials, and/or aesthetic materials (Article 1 of Law No. 13 of 2010 concerning Horticulture). Horticultural development in Indonesia has quite large potential because it is supported by legal/regulatory umbrellas, biodiversity, availability of agricultural land, agro-climate (suitable climate), technological support, labor availability, market availability, support for determining horticultural priority commodities, support for system development horticultural seeds, and support for the development of horticultural protection systems (Direktorat Jendral Hortikultura, 2019).

It can be concluded that horticultural commodities play an important role so their availability must always be controlled so that they are sufficient in quantity, of good quality, safe for consumption, affordable in price, and access by the whole community. Farming in

horticultural commodities is currently increasingly in demand, because the harvest period for horticultural crops, especially vegetables, is faster than other types of food crops, one of which is cabbage (*Brassica oleracea*). During 2017-2021, the highest cabbage production was in 2019, namely 24,130,600 quintals. Where the largest contributor to cabbage production in Indonesia during 2017-2021 is North Sumatra. During these 5 years, the highest production of cabbage in North Sumatra province occurred in 2021, namely 2,337,610 quintals (Badan Pusat Statistik 2022).

The agricultural sector in North Sumatra Province, which includes secondary crops, horticulture, and medicinal plants, is one of the sectors that is a priority for economic development. Several main sectors supporting the economy of North Sumatra in 2020 include the agriculture, forestry, and fisheries sectors with a contribution of 21.34%, then the processing industry sector which contributed 19.29%. The natural conditions of most of the fertile areas of North Sumatra are one of the potential basic capital for agricultural businesses because various crop commodities can grow abundantly.

North Sumatra Province has 33 districts/cities which also contribute to cabbage production in Indonesia. The following is data on cabbage production over the last 4 years in North Sumatra province, namely 2019-2022. Of the 33 districts/cities in North Sumatra province, only 12 districts/cities contribute to cabbage production. In the last 4 years (2019-2022) each district/city in North Sumatra Province has fluctuated in annual cabbage production.

Increasing and decreasing cabbage production in North Sumatra Province, it is necessary to conduct a study the form of determine the cabbage base area for increasing cabbage plants in certain areas, and it is hoped that this research can become one of the supporting factors for the regional government in the cabbage development policy in North Sumatra Province as an effort to increase the economic income of the people of North Sumatra.

RESEARCH METHODS

Research Location and Time

This research was conducted in North Sumatra Province with the consideration that this province ranks first in terms of cabbage production levels, namely with the production of 2.364.488 quintals in 2022 (Badan Pusat Statistik, 2022). The location for this research was determined purposively or deliberately. The research time was carried out in March - May 2023.

Data Source Type

The data collected in this research is secondary data. This secondary data was obtained from related government agencies such as the North Sumatra Province Food Crops and Horticulture Service, the North Sumatra Province Central Statistics Agency, and other related agencies. The data used in this research is cabbage production data in districts/cities in North Sumatra Province over the last 5 years, namely from 2018-2022.

Data Analysis

Research design is a research design that is used as a guide in carrying out the research process. This research design aims to provide clear and structured guidance to researchers in conducting their research. This research design is quantitative descriptive research.

Determining the agricultural commodities produced by each Regency/City in North Sumatra Province into basic (superior) and non-based (not superior) horticulture sub-sectors using the Location Quotient analysis approach. Location Quotient Analysis according to Indriyani (2019) can be formulated as follows:

$$LQ = \frac{Vi/V}{Yi/Y}$$

Explanation:

LQ: Location Quotient index for cabbage plants in Regency/City Provinces North Sumatra

Vi: Production value of cabbage plants at the Provincial District level North Sumatra (kw)

V: The total value of horticultural crop commodity production at level Regency in North Sumatra Province (kw)

Yi: Total value of cabbage production at the North Sumatra Province level (kw)

Y : Total value of horticultural crop commodity production at the North Sumatra Province level (kw)

Criteria:

1. If the *LQ* of a sector is more than one (> 1), it means that the role of that sector is greater in the region than nationally. This sector is the base sector. The potential can not only be developed to meet the needs of the area itself but also to meet the needs of the surrounding area.
2. If the *LQ* of a sector is less than one (< 1), then it means that the role of that sector is smaller in the region than nationally. This sector is a non-basic sector. This area does not have good agricultural potential for development.

Operational Definition

An operational definition is one of the definitions given to a variable by giving meaning, or specifying activities, or providing the operations needed to measure the variable. Cabbage (*Brassica oleracea*) is a type of leaf vegetable originating from subtropical areas that has long been known and cultivated in Indonesia. *Location Quotient (LQ)* is a comparison of the magnitude of the role of a regional sector to the magnitude of the role of that sector nationally.

Operational Limitations

The operational limitations used in this research are

1. Horticultural superior commodities are basic commodities that are feasible and profitable to develop in an area. Horticultural superior commodities are focused on 1 category, namely vegetable commodities, especially cabbage plants.
2. Non-leading commodities are non-basic commodities that are unable to sell their production outside their region.
3. The type of horticultural commodity studied is Cabbage (*Brassica oleracea*).
4. Cabbage production is the production produced by a horticultural crop sub-sector in an area in the last 5 years (2018 – 2022).

RESULTS AND DISCUSSION

Analysis Location Quotient (LQ) of Cabbage Crop Production in North Sumatra Province

Analysis *Location Quotient (LQ)* used to find out whether a cabbage commodity in a Regency/City in North Sumatra Province can be classified into a base or non-base sector.

Analysis Location Quotient (LQ) Cabbage Crop Production in North Sumatra Province 2018 – 2022

1. The following are the average results of cabbage production analysis from 2018-2022 based on 33 Regencies/Cities in North Sumatra Province using Location Quotient (*LQ*) Analysis. There are 4 regencies/cities that have a base sector for cabbage production, namely, Samosir Regency, Simalungun Regency, Karo Regency, and Humbang Hasundutan Regency. It can be seen in the graphic image below that there are 4 regencies/cities that have the following basic sectors for cabbage production.

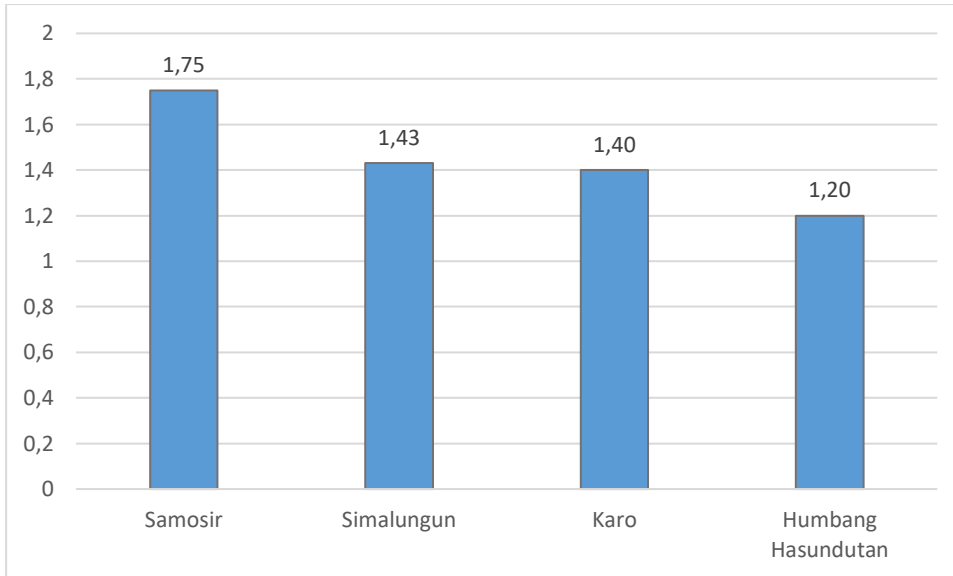


Figure 1. Location Quotient (LQ) Value of Cabbage Production Base Sector in North Sumatra Province 2018-2022.

Source: BPS North Sumatra Processed

Based on the graphic image above, the Location Quotient (LQ) results for the cabbage production base sector are 4 districts, namely Samosir District at 1.75, Simalungun District at 1.43, Karo District at 1.40, and Humbang Hasundutan District at 1.20. This can be seen from the four districts which have a suitable base sector for developing cabbage plants.

- The following are the average results of cabbage production analysis from 2018-2022 based on 33 Regencies/Cities in North Sumatra Province using Location Quotient (LQ) Analysis. There are 8 regencies/cities that have the opportunity to become the base sector for cabbage production, namely Dairi Regency, North Tapanuli Regency, Pakpak Bharat Regency, Mandailing Natal Regency, Padang Sidempuan City, South Tapanuli Regency, Toba Regency, North Padang Lawas Regency. It can be seen in the graphic image below that there are 8 regencies/cities that have the opportunity to become the base sector for cabbage plants as follows.

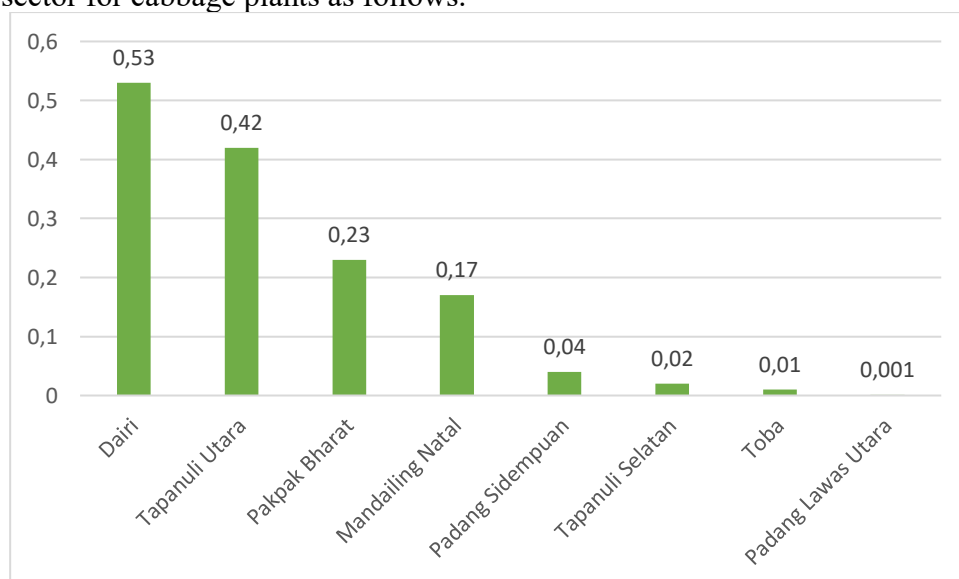


Figure 2. Location Quotient (LQ) Values Have Opportunities in the Cabbage Production Base Sector in North Sumatra Province in 2018-2022.

Source: BPS North Sumatra Processed

Based on the graphic image above, the Location Quotient (LQ) results that have opportunities in the cabbage production base sector are 4 districts with the highest, namely, Dairi District at 0.53, North Tapanuli District at 0.42, Pakpak Bharat District at 0.23, and Mandailing Natal Regency was 0.17. This can be seen from the four districts that have the highest opportunities in the basic sector to develop cabbage plants, but the regional government must look at the districts that have the basic sector.

3. The following are the average results of the non-based cabbage production sector in North Sumatra Province from 2018-2022 based on 33 Regencies/Cities in North Sumatra Province using Location Quotient (LQ) Analysis. There are 21 regencies/cities that have non-based cabbage production sectors, namely, Nias Regency, Central Tapanuli Regency, Labuhanbatu Regency, Asahan Regency, Deli Serdang Regency, Langkat Regency, South Nias Regency, Serdang Bedagai Regency, Batu Bara Regency, Padang Lawas Regency, South Labuhanbatu Regency, North Labuhanbatu Regency, North Nias Regency, West Nias Regency, Sibolga City, Tanjungbalai City, Pematangsiantar City, Tebing Tinggi City, Medan City, Binjai City, and Gunungsitoli City. It can be seen in the graphic image below that there are 21 regencies/cities that have non-basic sectors that do not produce as follows.

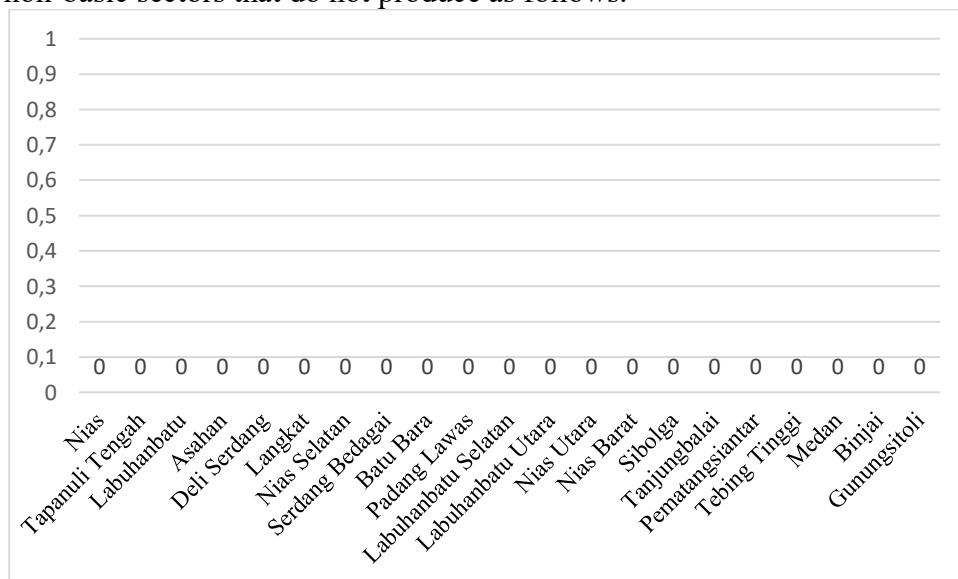


Figure 3. Location Quotient (LQ) Value of the Non-Based Production Sector of Cabbage Crops in North Sumatra Province 2018-2022

Source: BPS North Sumatra Processed

Based on the graphic image above, the results of the Location Quotient (LQ) of the non-based cabbage production sector in several districts/cities can be seen that production and productivity is 0 (zero) so production must be increased further. And that means some regencies/cities cannot meet the needs of the region itself. The regencies/cities in question are, Nias Regency, Central Tapanuli Regency, Labuhanbatu Regency, Asahan Regency, Deli Serdang Regency, Langkatm Regency, South Nias Regency, Serdang Bedagai Regency, Batu Bara Regency, Padang Lawas Regency, South Labuhanbatu Regency, North Labuhanbatu Regency, North Nias Regency, West

Nias Regency, Sibolga City, Tanjungbalai City, Pematangsiantar City, Tebing Tinggi City, Medan City, Binjai City, and Gunungsitoli City.

CONCLUSION AND SUGGESTION

Based on the results of the Location Quotient (LQ) analysis regarding the production base of cabbage plants in 33 regencies/cities in North Sumatra Province, it was found that several districts have potential, no potential, and have opportunities for cabbage production, including:

1. There are 4 districts identified as having potential in the production base of cabbage plants, namely, Samosir District, Simalungun District, Karo District, and Humbang Hasundutan District.
2. There are several regencies/cities that have been identified as not having potential in the production base of cabbage plants, namely Nias Regency, Central Tapanuli Regency, Labuhanbatu Regency, Asahan Regency, Deli Serdang Regency, Langkat Regency, South Nias Regency, Serdang Bedagai Regency, Batu Bara Regency, Padang Lawas, South Labuhanbatu Regency, North Labuhanbatu Regency, North Nias Regency, West Nias Regency, Sibolga City, Tanjungbalai City, Pematangsiantar City, Tebing Tinggi City, Medan City, Binjai City, and Gunungsitoli City.
3. And there are several districts that have been identified as having opportunities in the production of cabbage plants, namely Dairi District, North Tapanuli District, Pakpak Bharat District, Mandailing Natal District, Padang Sidempuan City, South Tapanuli District, Toba District, and North Padang Lawas District.

BIBLIOGRAPHY

- Ashari, Semeru. 1995. *Hortikultura, Aspek Budidaya*. Penerbit UI. Jakarta
- Badan Pusat Statistik Indonesia. 2020. *Ekspor Menurut Provinsi Asal Barang Tahun 2019*. Jakarta
- Badan Pusat Statistik Sumatera Utara. 2022. *Statistik Daerah Provinsi Sumatera Utara*.
- Badan Pusat Statistik Sumatera Utara. 2023. *Provinsi Sumatera Utara dalam Angka*.
- Direktorat Jenderal Hortikultura Kementerian Pertanian. (2019). *Rencana Strategis Direktorat Jenderal Hortikultura Tahun 2020-2024*.
- Direktorat Jendral Peternakan dan Kesehatan Hewan. 2021.
- Fitriani, M. L. 2009. *Budi Daya Tanaman Kubis Bunga (Brassica Oleraceae Var Botrytis L.) Di Kebun Benih Hortikultura (Kbh) Tawangmangu*. Fakultas Pertanian. Universitas Sebelas Maret. Surakarta.
- Indriyani, S. (2019). *Pengembangan Komoditas Unggulan Sektor Pertanian Dalam Upaya Peningkatan Perekonomian*. Jurnal Gorontalo Development Review. Vol 2.
- Jumiyanti, Kalzum R. 2018. *Analisis Location Quotient dalam Penentuan Sektor Basis dan Non Basis di Kabupaten Gorontalo*. Jurnal Studi Pembangunan Fakultas Ekonomi Universitas Gorontalo. Volume 1. No. 1. Gorontalo Development.
- Karo-karo, Esra F., dkk. 2021. *Ananlisis Efisiensi Teknis, Alokasi dan Ekonomi Produksi Kubis di Kabupaten Karo*. JURNAL AGRICA. 14(2) 2021:116-130.
- Kementerian Pertanian Republik Indonesia (2019). *Ekspor-Impor Komoditas Pertanian*. Jakarta (ID): Kemenrian Pertanian.
- Ramadhani R., Gustiana C., Faoeza H. (2022). *Analisis Location Quotient (LQ) dalam Penentuan Lokasi Basis Tanaman Cabai Merah Besar (Capsicum annum L.) di Provinsi Aceh*. Jurnal Fakultas Pertanian. 6(1) 2022:617-627.

- Rukmana R. 1994. *Bertanam Kubis*. Yogyakarta: Kanisius.
- Saragih, Jef Rudiantho, dkk. 2021. *Komoditas Unggulan dan Potensial Sektor Pertanian Kabupaten Simalungun, Provinsi Sumatera Utara*. Agro Bali : Agricultural Journal. 4(1) 2021:51-62.
- Sastrosayono, S. (2004). *Budidaya Tanaman Kubis*. Agromedia Pustaka, Jakarta.
- Sumbambhi, Brama Cardio, dkk. 2020. *Analisis Location Quotient (LQ) Tanaman Cabai Besar (Capsicum annum L.) di Provinsi Sumatera Utara*. Jurnal Ilmiah Pertanian (JIPERTA). 2(2) 2020:169-179.
- Zulkarnain. (2009). *Dasar-dasar Hortikultura*. Jakarta: Bumi Aksara.
- Zulkarnain. (2013). *Budidaya Sayuran Tropis*. Jakarta. Bumi Aksara. 219 hal.
- Zulkarnain. (2018). *Kultur Jaringan Tanaman*. Jakarta: Bumi Aksara.