

LEADING COMMODITIES OF LIVESTOCK SUBSECTOR IN RIAU ISLANDS PROVINCE

Komoditas Unggulan Subsektor Peternakan di Provinsi Kepulauan Riau

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ABSTRACT

This study aims to determine the leading commodities of livestock subsector in Riau Islands Province and to find out its growth structure. Location quotient (LQ), dynamic location quotient (DLQ), Klassen Typology (KT) and shift-share analysis (SSA) were applied in the analysis. The results at the subsector level shows that livestock becomes the leading subsector of agriculture in Riau Islands Province. At the commodity level, the livestock commodities used as research objects are selected based on relatively dominant production in Riau Islands Province, so it is expected to meet the representation in subsector. The selected commodities are: pig, broiler, cattle, goat, duck and egg of layer chicken. Pigs are the leading commodity in the livestock subsector in the Riau Islands Province. The growth structure of the livestock subsector is entirely positive in the economy. Livestock subsector has become the biggest contributor of GRDP growth in agriculture sector in Riau Islands Province. All growth components of this subsector are positive and categorized in quadrant I (rapid growth) Klassen Typology. Likewise at the commodity level, the growth structure of leading commodities (pigs) are the same as the subsector level.

Keywords: agricultural leading commodities, Klassen Typology, location quotient, Riau Islands, shift-share analysis

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INTISARI

Penelitian ini bertujuan untuk menentukan komoditas unggulan subsektor peternakan serta mengetahui struktur pertumbuhannya di Provinsi Kepulauan Riau. Metode analisis yang digunakan antara lain: location quotient (LQ), dynamic location quotient (DLQ), Klassen Typology (KT) dan shift-share analysis (SSA). Pada tingkat subsektor, subsektor peternakan diketahui sebagai subsektor unggulan dalam sektor pertanian di Provinsi Kepulauan Riau. Selanjutnya pada tingkat komoditas, objek penelitian yang digunakan yaitu komoditas ternak yang dipilih berdasarkan jumlah produksi relatif dominan di Provinsi Kepulauan Riau.

Dengan demikian, diharapkan dapat mewakili subsektor peternakan secara keseluruhan. Komoditas yang dipilih sebagai objek penelitian antara lain: babi, ayam ras pedaging, sapi, kambing, itik dan telur ayam petelur. Hasil analisis menunjukkan bahwa babi merupakan komoditas unggulan Subsektor Peternakan di Provinsi Kepulauan Riau. Dilihat struktur pertumbuhannya, subsektor peternakan secara keseluruhan bernilai positif dalam perekonomian. Subsektor peternakan menjadi penyumbang terbesar pertumbuhan PDRB sektor pertanian di Provinsi Kepulauan Riau. Seluruh komponen pertumbuhan subsektor ini bernilai positif dan berada pada kondisi maju dan tumbuh pesat (kuadran I pada Tipologi Klassen). Demikian juga pada tingkat komoditas, struktur pertumbuhan komoditas unggulan (babi) sama dengan tingkat subsektor, seluruh komponen pertumbuhan bernilai positif serta maju dan tumbuh pesat (kuadran I).

Kata kunci: *Kepulauan Riau, Klassen Typology, komoditas unggulan pertanian, location quotient, shift-share analysis*

INTRODUCTION

The availability of agricultural products is very important to concern considering of closely linked with the basic needs of society, especially food. Lack of supply can be anticipated through trade activities, but the presence of trade liberalization concept based on the principle of non-discrimination and open market cannot be interpreted as the principle in the implementation level. Certain standard difference adopted among countries will have a negative effect on the country that is not prepared and has a high dependence on other country. Davis & Harrigan (2011) states that trade liberalization is in fact still very controversial, the majority in the United States says it costs jobs and lowers wages. Simulation of Davis & Harrigan (2011) shows that as many as quarter of "good jobs" (above average wage) can be destroyed in liberalization.

According to data from BPS Kepri (2017), the agricultural sector in Riau

Islands Province is a relatively small sector of its contribution to the economy. This was very different from the condition of Riau Province, as the origin province which was separated in 2004, which was quite dominant in the agricultural sector. Nevertheless, the development of border region is one of the priority agenda of Indonesia Government policy at the moment. The development of export-oriented food barns in border areas represents the implementation of such policy in the agricultural sector, one of them is Riau Islands Province (Kepri) bordering to Malaysia and Singapore. Accordingly, the 3rd Regional Medium Term Development Plan (RPJM) of Riau Islands Province leads to agricultural and plantation products with the main commodity in accordance with the local environmental condition.

Library research found that the literature with themes around agriculture in the Riau Islands Province, especially the

livestock subsector, is very rare. Zurriyati (2017) writes about the results of experiments related to productivity of local goat fed with Urea Molasses Block in Bintan Regency, Riau Islands Province. Ahmad (2014) has studied the effectiveness of giving herbal drugs to beef cattle performance in Bintan Regency, Riau Islands Province. Both studies are technical research on livestock cultivation. Kartikaningdyah (2012) analyzed the superior products in Lingga Regency using LQ analysis and weighting analysis of economic development indicators. One of the results found that the livestock subsector economic development indicators ranked first in North Lingga District for large livestock, in the Singkep Barat District for poultry. The main commodities of large livestock are cattle and goats, while the leading commodities of poultry consist of broilers and laying hens.

Several previous studies related to sectoral excellence, such as Wiryamarta & Mulyo (2009) analyze the performance of agricultural sector in Riau Province using LQ, shift-share, and Klassen Typology. Data used is GRDP Riau Province and GDP National in 1999-2006 according to the business field based on constant price (ADHK) 2000. Wahyuningtyas *et al.*, (2013) analyze the leading sector in Kendal Regency. Iyan (2014) used LQ method to analyze agricultural commodity in Sumatera. Ogari *et al.*, (2014) determine agricultural leading commodities of East OKU Regency. Oktavia *et al.*, (2015) analyze the contribution of the

agricultural sector to South Sumatra GRDP, identifying leading agricultural sectors and subsector, and analyzing the component of growth in the agricultural sector. Generally researchers use LQ, DLQ, Shift-Share and Klassen Typology as a method of analysis. Each focuses on a particular location as the scope of the research. This study intends to focus on locations in the Riau Islands Province, with the object of study up to the subsector and commodities levels in the agricultural sector, which according to BPS classification, are included in the agricultural business field (agriculture, forestry and fisheries). The objectives of this study are to determine the leading commodities of livestock subsector in Riau Islands Province, and to find out its growth structure.

METHODS

This analytical descriptive research uses secondary data in the form of time series for seven years from 2010 to 2016. The data collected as follows: production of agricultural commodities at provincial and national level (Riau Islands Province and Indonesia); commodity price data, GRDP, GDP, and other supporting data related to the description of area and scope of the study. Data collection uses two approaches are library research and data collection sourced from: BPS; Ministry of Agriculture of the Republic of Indonesia and related parties by downloading, copying data already available or taking notes.

The analysis used to determine leading subsectors and commodities of agriculture in Riau Islands Province that are location quotient (LQ) and dynamic location quotient (DLQ). The following LQ formula is used (Kowalewski, 2015; Darlen et al., 2015):

$$LQ = \frac{NP_i/V_i}{NP_i^*/P_i}, \text{ where:}$$

NP_i : production value (GRDP) of commodity (subsector) i at province level

V_i : total of production value (GRDP) of commodity (subsector) at province level

NP_i^* : production value (GRDP) of commodity (subsector) i at national level

P_i : total of production value (GRDP) of commodity (subsector) at national level

Result of LQ calculation obtains three criteria, namely:

1. $LQ > 1$; means the commodity becomes the base (source of growth). Commodity has comparative advantage, the results not only meet the needs of the region but also can be exported out of the region.
2. $LQ = 1$; the commodity is classified as non-base, has no comparative advantage. Its production is just enough to meet the needs of its own region.
3. $LQ < 1$; the commodity includes non-base. Production of commodity in a

region can not meet its own needs so need to supply or import from outside.

DLQ is variance of LQ by introducing growth rate to provide additional information on static LQ results, predicting possible changes or sectoral repositioning (Wibowo et al., 2016; Oksatriandhi & Santoso, 2014).

$$DLQ = \left| \frac{(1 + g_{ij}) / (1 + g_j)}{(1 + G_i) / (1 + G_n)} \right|^z, \text{ where:}$$

g_{ij} = average growth rate of subsector (commodity) i of Riau Islands Province

g_j = average growth rate of total subsector (commodity) of Riau Islands Province

G_i = average growth rate of subsector (commodity) i at national level

G_n = average growth rate of total subsector (commodity) at national level

z = analyzed time period.

DLQ calculation result is defined as follows:

1. $DLQ > 1$; means the proportion of subsector (commodity) (i) growth rate to its total growth rate in Riau Islands Province is higher than the proportion of the same subsector (commodity) growth rate at the national level (potential to be better).
2. $DLQ = 1$; means the proportion of subsector (commodity) (i) growth rate to its total growth rate in Riau Islands

Province is equal to the proportion of the same subsector (commodity) growth rate at the national level (stagnant potential).

- DLQ<1; means the proportion of subsector (commodity) (i) growth rate to its total growth rate in Riau Islands Province is lower than the proportion of the same subsector (commodity) growth rate at the national level (potential to decline).

The next purpose of this research is to find out the growth structure of agriculture leading commodities in economic dynamics, obtained by using Klassen Typology and Shift-share. Commodity (subsector) is classified by Klassen Typology in one of the four categories as shown at Table 1. The calculation step of Klassen Typology analysis follows (Wahyuningtyas *et al.*, 2013), with adjustments, as follows:

Calculating the contribution rate of commodity (subsector) i for Riau Islands Province and national, by formula:

$$C_i = \frac{NP_i}{NP} \times 100\%$$

, where:

C_i = contribution rate of commodity (subsector) i

NP_i = production value (GRDP) of commodity (subsector) i

NP = total production value (GRDP) of commodity (subsector)

- Calculating the average contribution of commodity (subsector) i for Riau Islands Province and national, by formula:

$$A_i = \frac{\sum C_i}{z}$$

, where:

A_i = average contribution rate of commodity (subsector) i

C_i = contribution rate of commodity (subsector) i

z = analyzed time period

- Calculating the growth rate of commodity (subsector) i for Riau Islands Province and national, by formula:

Table 1. Klassen Typology Matrix for Commodity (Subsector) Grouping

Growth Rate	Contribution Rate	
	$A_i \geq A_{i*}$	$A_i < A_{i*}$
$r_i \geq r_{i*}$	I Commodity/Subsector Rapid Growth	III Commodity/Subsector Growing
$r_i < r_{i*}$	II Commodity/Subsector Retarded	IV Commodity/Subsector Underdeveloped

Explanation: A_i = average contribution rate of commodity (subsector) i Riau Islands Province

A_{i*} = average contribution rate of commodity (subsector) i national

r_i = average growth rate of commodity (subsector) i Riau Islands Province

r_{i*} = average growth rate of commodity (subsector) i national

Source: Saputra, 2016; Wahyuningtyas *et al.*, 2013

$$G_{it} = \frac{NPi_t - NPi_{t-1}}{NPi_{t-1}} \times 100\%, \text{ where:}$$

G_{it} = growth rate of commodity (subsector) i at year t

NPi_t = NPi at year (t)

NPi_{t-1} = NPi at year (t-1)

3. Calculating the average growth rate of commodity (subsector) i for Riau Islands Province and national, by formula:

$$r_i = \frac{\sum G_{it}}{z}, \text{ where:}$$

r_i = average growth rate of commodity (subsector) i

G_{it} = growth rate of commodity (subsector) i at year t

z = analyzed time period.

Shift-share analysis assumed that the change in the production value or GRDP of a region can be divided into three growth components that are regional growth component (RG), proportional growth or industrial mix (PG), regional share growth component (RSG). The form of mathematical equation as follows (Sari & Santoso, 2016; Ramswamy & Ganti, 2015; Herath et al., 2011):

$$\Delta V_{ij} = V'_{ij} - V_{ij} = RG_{ij} + PG_{ij} + RSG_{ij}$$

Where:

$$RG_{ij} = V_{ij} \times G$$

$$PG_{ij} = V_{ij} \times \left(\frac{(P'_i - P_i)}{P_i} - G \right)$$

$$RSG_{ij} = V_{ij} \times \left(\frac{(V'_{ij} - V_{ij})}{V_{ij}} - \frac{(P'_i - P_i)}{P_i} \right)$$

where:

ΔV_{ij} = change in the value of subsector (commodity) i in province j

V_{ij} = value of subsector (commodity) i at province j in the initial year of analysis

V'_{ij} = value of subsector (commodity) i at province j in the final year of analysis

G = the growth rate at the national average growth rate (GDP) during the analysis period

P_i = value of subsector (commodity) i at national level in the initial year of analysis

P'_i = value of subsector (commodity) i at national level in the final year of analysis.

The conclusion can be obtained through shift-share analysis:

1. The Regional Growth (RG) component shows the changes that will occur in sector i in a region if the industry grows at the same level with the average national economic growth rate (GDP) during the period of time studied (expected change).
2. Positive Proportional Growth (PG) gives an indication that the sector i is an advanced sector, growing faster than the overall economic growth rate. Negative PG indicates that the sector is slow sector.

3. Regional Share Growth (RSG) shows the competitiveness of a sector *i* in a region compared with the same sector at the national level.

subsectors of commodities not included in the leading categories are food crops (0.04) and horticulture (0.75). Furthermore, the results of DLQ analysis shows that food crops (1.21) and horticulture (1.04) subsectors have the potential to become the leading subsectors in the future. In contrast, the plantation subsector (0.87) and agricultural services and hunting (0.91) have the potential to be decreased in the future. Livestock subsector (1.1) tends to remain in the current category as the

RESULTS AND DISCUSSION

Subsector Analysis

The result of LQ analysis shows that currently the leading subsector consists of: plantation (1.59), livestock (1.78), and subsector of agricultural services and hunting (1.22). Meanwhile, the two

Table 2. Growth Structure of GRDP Agricultural Sector in Riau Islands Province, 2010-2016

Subsector	Growth Components (million)				
	Actual Changes (ΔV _i)	Regional Growth (RG)	Proportional Growth (PG)	Regional Share Growth (RSG)	Net Relative Change (PG+RSG)
Food Crops	5,412.52	5,353.00	-2,966.24	3,025.76	59.52
Horticulture	28,151.98	51,871.38	-19,862.31	-3,857.09	-23,719.40
Plantation	91,690.93	294,719.81	31,017.66	-234,046.54	-203,028.88
Livestock	152,339.89	121,412.42	7,764.24	23,163.23	30,927.47
Agricultural Services & Hunting	4,419.83	11,628.28	-505.05	-6,703.40	-7,208.45
Total	282,015.15	484,984.88	15,448.32	-218,418.04	-202,969.73

Source: Analysis of secondary data, 2018

Table 3. Distribution of Major Livestock Populations by Regency / City in Riau Islands Province, 2016

Regency / City	Cattle	Goat	Pig	Layer Chicken	Broiler	Duck
Regency						
Karimun	1,573	14,152	1,661	112,809	137,201	1,379
Bintan	515	1,156	335	277,008	609,780	7,498
Natuna	9,022	1,507	-	1,368	989,693	3,004
Lingga	2,005	852	691	9,053	36,434	2,107
Anambas Islands	4,141	227	-	-	4,738	1,021
City						
Batam	729	1,045	326,842	208,048	7,784,078	17,779
Tanjungpinang	414	392	486	61,279	59,352	2,294
Riau Islands	18,399	19,331	330,015	669,565	9,621,276	35,082

Source: Food, Agriculture and Animal Health Office of Riau Islands Province (BPS) Kepri, 2017

leading subsector in Riau Islands Province. The leading subsectors are one that has values of $LQ > 1$ and $DLQ > 1$. Thus, livestock is the only leading subsector in Riau Islands Province.

The results of Klassen Typology analysis found that livestock subsector in Riau Islands Province is in rapid growth category (quadrant I). The contribution and growth rate of livestock subsector at provincial level are higher than the contribution and growth rate at national level. The results of shift-share analysis are presented in Table 2. It shows the growth structure of GRDP Agricultural Sector in Riau Islands (Kepri) Province. The livestock subsector is the only one that has a positive value on all growth components. The food crops and livestock subsectors have growth rates above the national average, the relative measure of their economic performance can be seen in positive value of the net relative change.

Commodity Analysis

Further analysis is carried out on the scope of the leading subsector for commodity level. The livestock commodities used as research objects are selected based on relatively dominant production in Riau Islands Province, so it is expected to meet the representation in subsector. The selected commodities are: pig, broiler, cattle, goat, duck and egg of layer chicken. This can be attributed to the number of population in 2016:

pig reached 330,015; while broiler population was 9,621,276; cattle population was 18,399; goat population was 19,331; duck population numbered 35,082 and 425,812 layer chicken. Distribution of livestock populations can be seen in Table 3. The results of the LQ analysis found that pigs are currently a leading commodity (4.86). Furthermore, analysis using DLQ found that the prospect for almost all livestock commodities that have been studied can be leading in the future except for broiler (0.78) and egg of layer chicken (0.51). The pig (2.86) remains as one of the leading commodities of the livestock subsector. Pig farms in Riau Islands Province are concentrated in Batam City, especially with the arrangement of islands specifically for its development. The government has sought regulations related to the development of these pig farms considering that these livestock products are only for very limited circles. The biggest market share of pig products is to be exported to Singapore. The business people who are related to pigs are also limited among the people of Riau Islands Province who are predominantly Malay. The results of the DLQ analysis also show that the cattle (14.88), goats (6.24) and ducks (4.18) commodities can experience the reposition into leading commodities. Thus, it can be expected to increase the positive contribution of the livestock subsector to economic growth in Riau Islands Province. The growth structure of agricultural commodities in Riau Islands Province can be seen from the

results of Klassen Typology and Shift-share analysis as shown in Table 4. The results of Klassen Typology analysis describe that the pig commodity is in quadrant I. Quadrant III is occupied by cattle, goats, and ducks. These three commodities are classified as a growing commodity with a relatively fast growth rate although its contribution is still relatively low. Thus, the commodities classified in Quadrant III can be expected to further increase their contribution over time. The synergy of various parties is needed, the nearest example that can be optimized is SIWAB Program (Mandatory Cattle Breeding). The SIWAB program is aimed to achieving the meat sufficiency target of 2026 by increasing the population of beef cattle (Rusdiana & Soeharsono, 2017). As for the commodities in quadrant IV, considered as underdeveloped, are broiler and egg of layer chicken. These results confirm the results of previous analyzes of LQ and DLQ which state that both commodities are not a leading commodity both now and in the future. The total commodities analyzed in the livestock

subsector experienced a growth of Rp291.789 Billion. The result of the shift-share analysis shows that the growth of this actual value has exceeded the expected regional growth. This can be attributed to the two components that make up the relative net change, namely proportional growth (PG) and regional share growth (RSG).

The livestock subsector in total has structural strength as reflected in positive value of total industrial mix/proportional growth ($PG > 0$) and the superiority of regional competitiveness as indicated by the positive value of total regional competitiveness/ regional share growth ($RSG > 0$). Table 4 shows the detail information on the commodities that have a positive value of industrial mix, among others: pig, broiler, duck, and egg. The commodities that experienced superior competitiveness of the region include pigs, cattle, and goat. Furthermore, commodities that experience growth rates above the national average (net relative changes= $PG+RSG > 0$) include goat, cattle, broiler, and pig. These four

Table 4. Growth Pattern of Production Value of Some Commodities of Livestock Subsector in Riau Islands Province, 2010-2016

Commodities	Growth Components (million)					Klassen Typ.
	ΔV_i	RG	PG	RSG	PG+RSG	
Pig	145,024.48	17,711.29	17,828.51	109,484.68	127,313.19	1
Broiler	93,753.74	59,252.71	53,162.38	-18,661.35	34,501.03	4
Cattle	79,694.50	4,843.62	-1,809.07	76,659.96	74,850.88	3
Goat	8,906.58	866.41	-906.20	8,946.37	8,040.17	3
Duck	-282.03	267.85	277.06	-826.95	-549.89	3
Egg of layer chicken	-35,308.74	38,800.12	35,062.46	-109,171.31	-74,108.86	4
Total	291,788.53	121,742.00	103,615.12	66,431.40	170,046.53	

Source: Analysis of secondary data, 2018

commodities contributed positively to the growth of the livestock subsector.

CONCLUSION AND SUGGESTION

The leading subsector of agriculture in Riau Islands Province is the livestock subsector. At the commodity level, pigs are the leading commodity in the livestock subsector in the Riau Islands Province. The growth structure of the livestock subsector, as a leading subsector, is entirely positive in the economy. Livestock subsector has become the biggest contributor of GDP growth in agriculture sector in Riau Islands Province. All growth components of this subsector are positive and categorized in quadrant I (rapid growth). At commodity level, the growth structure of leading commodities (pig) is in quadrant I (rapid growth) in Klassen Typology, have positive growth in all growth components.

Based on the results of the study, it is suggested to increase the role of livestock subsector as the leading subsector through various commodities. Existing leading commodities need to be accompanied by an increase in other livestock commodities. Cattle and goats have been known to be expected to be the future leading commodities.

REFERENCES

- Ahmad, S. N. 2014. Kajian Efektivitas Pemberian Obat Cacing Herbal Terhadap Performa Sapi Potong. In *Prosiding Seminar Nasional Inovasi Teknologi Pertanian Spesifik Lokasi* (pp. 503–509). Banjarbaru.
- Badan Pusat Statistik Provinsi Kepulauan Riau. 2017. *Provinsi Kepulauan Riau dalam Angka 2017*. Tanjungpinang.
- Darlen, M. F., Hadi, S., & Ardiansyah, M. 2015. Regional Development Based on Dominant Potential in East Manggarai Regency, East Nusa Tenggara Province as a New Autonomous Region. *TATA LOKA*, 17(1), 37–52.
- Davis, D. R., & Harrigan, J. 2011. Good Jobs, Bad Jobs, and Trade Liberalization. *Journal of International Economics*, 84(1): 26–36.
- Herath, J., Gebremedhin, T. G., & Maumbe, B. M. 2011. A Dynamic Shift-Share Analysis of Economic Growth in West Virginia. *Journal of Rural and Community Development*, 6(2): 155–169.
- Iyan, R. 2014. Analisis Komoditas Unggulan Sektor Pertanian di Wilayah Sumatera. *Jurnal Sosial Ekonomi Pembangunan*, IV(11): 215–235.
- Kartikaningdyah, E. 2012. Analisis Location Quotient dalam Penentuan Produk Unggulan pada Beberapa Sektor di Kabupaten Lingga Kepulauan Riau. *Jurnal Integrasi*, 4(1), 31–46.
- Kowalewski, J. 2015. Regionalization of National Input–Output Tables:

- Empirical Evidence on the Use of the FLQ Formula. *Regional Studies*, 49(2): 240–250.
- Ogari, P. A., Irham, & Hartono, S. 2014. Penentuan Komoditas Unggulan Pertanian Kabupaten Ogan Komering Ulu Timur. *Agro Ekonomi*, 25(2): 160–168.
- Oksatriandhi, B., & Santoso, E. B. 2014. Identifikasi Komoditas Unggulan Di Kawasan Agropolitan Kabupaten Pasaman. *Jurnal Teknik ITS*, 3(1): C8–C11.
- Oktavia, Z., Darwanto, D. H., & Hartono, S. 2015. Sektor Pertanian Unggulan di Sumatera Selatan. *AGRARIS: Journal of Agribusiness and Rural Development Research*, 1(2): 61–69.
- Ramswamy, S., & Ganti, S. 2015. Comparative Analysis of Sectoral Performance of Indian States Using Shift Share Model. *Journal of Management Research*, 8(2): 25–41.
- Rusdiana, S., & Soeharsono. 2017. Program SIWAB untuk Meningkatkan Populasi Sapi Potong dan Nilai Ekonomi Usaha Ternak. *Forum Penelitian Agro Ekonomi*, 35(2): 125–137.
- Saputra, D. 2016. Analisis Pertumbuhan Ekonomi dan Tingkat Ketimpangan Antar Kabupaten/Kota di Provinsi Jawa Barat. *Creative Research Journal*, 2(1): 1–18.
- Sari, D. A. W., & Santoso, E. B. 2016. Faktor-faktor yang Mempengaruhi Pengembangan Komoditas Unggulan Hortikultura di Kawasan Agropolitan Ngawasondat Kabupaten Kediri. *JURNAL TEKNIK ITS*, 5(1), C64–C69.
- Wahyuningtyas, R., Rusgiyono, A., & Wilandari, Y. 2013. Analisis Sektor Unggulan Menggunakan Data PDRB (Studi Kasus BPS Kabupaten Kendal Tahun 2006-2010). *Jurnal Gaussian*, 2(3): 219–228.
- Wibowo, H., Darsono, & Nurjayanti, E. D. 2016. Identifikasi Posisi dan Kontribusi Sektor Pertanian dalam Perekonomian Daerah di Kabupaten Temanggung. *MEDIAGRO Jurnal Ilmu-Ilmu Pertanian*, 12(1), 17–26.
- Wiryamarta, F., & Mulyo, J. H. 2009. *Kinerja Sektor Pertanian di Provinsi Riau pada Era Otonomi Daerah*. Yogyakarta: MU:3 Yogya.
- Zurriyati, Y. 2017. Produktivitas Kambing Lokal dengan Pemberian Urea Molasses Block (UMB) di Kabupaten Bintan, Provinsi Kepulauan Riau. In *Prosiding Seminar Nasional Teknologi Peternakan Dan Veteriner* (pp. 357–362). Bogor.