Dairy Agribusiness to Improve Farmers' Welfare in Kabupaten Banyumas

Novie Andri Setianto*, Sri Mastuti, Oentoeng Edy Djatmiko, Lucie Setiana, Hermin Purwaningsih, Yusmi Nur Wakhidati and Nunung Noor Hidayat

Faculty of Animal Science, Jenderal Soedirman University, Banyumas, Central Java, Indonesia
*Corresponding author email: novie.setianto@unsoed.ac.id

Abstract. This study aimed to identify factors affecting the dairy agribusiness, to develop mapping for dairy agribusiness development and to determine its strategy improvement. Action research was undertaken followed by descriptive quantitative statistics analysis to present the current condition of the business. Potency and constrains of dairy farming were identified using SWOT analysis. LQ (*Location Quotient*) analysis followed by series of focus group discussions was conducted to develop the grand design of dairy agribusiness. Research showed that trend of the dairy cow population in Banyumas is relatively stagnant despite an increasing trend on the previous year. LQ analysis showed that sub districts suitable as the basis for dairy development are Kecamatan Baturraden, Pekuncen, Karanglewas, Kedungbanteng and Cilongok. SWOT analysis reported that dairy farming in Banyumas is at quadrant I which indicates an S-O (Strength – Opportunity) strategy focusing on utilizing the strength to maximize the opportunity existed to improve the productivity of dairy cattle.

Keywords: dairy cattle, action research, agribusiness, mapping, development strategy

Abstrak. Tujuan penelitian ini adalah: menginventarisir potensi dan permasalahan pengembangan agribisnis sapi perah di Kabupaten Banyumas, membuat pemetaan basis pengembangan agribisnis berbasis sapi perah di Kabupaten Banyumas dan membuat perumusan strategi pengembangan agribisnis sapi perah di Kabupaten Banyumas. Penelitian ini menggunakan metode kaji tindak (*action research*). Data kuantitatif dianalisis menggunakan statistik sederhana berupa nilai rata-rata, frekuensi distribusi, dan tabulasi silang dan dilaporkan secara deskriptif. Potensi dan permasalahan sapi perah dianalisis menggunakan SWOT analysis dan analisis LQ (*Location quation*). Penyusunan Grand Design pengembangan agrowisata berbasis sapi perah di Baturraden dilakukan FGD dengan stakeholder yang berkaitan dengan sapi perah dan dilaporkan secara deskriptif. Hasil Penelitian menunjukkan trend populasi ternak sapi perah di Kabupaten Banyumas meningkat lambat bahkan di tahun terakhir mengalami penurunan. Hasil analisis LQ menunjukkan bahwa Kecamatan yang potensial untuk pengembangan adalah Kecamatan Baturraden, Pekuncen, Karanglewas, Kedungbanteng dan Ciolongok. Hasil analisis SWOT kondisi usaha sapi perah ada di kuadran I. maka strategi pengembangan sapi perah yang cocok adalah strategi S-O (Strength – Opportunity) yaitu strategi yang bersifat agresif atau ofensif bagaimana menggunakan kekuatan secara optimal dan memanfaatkan peluang yang ada untuk meningkatkan produktivitas sapi perah.

Kata kunci: Sapi perah, kaji tindak, agribisnis, pemetaan, strategi pengembangan

Introduction

Domestic milk production can meet national milk needs by 20 percent. The market opportunity is constrained by the many obstacles in raising dairy cows. One of the factors that cause the community to be less interested in the dairy farming business is the low selling price of milk, thus low farmer's income. One of the strategies to increase community income is establishing agribusiness areas (Mukson et al. 2009). The agribusiness activity will be more interesting if it is associated with tourism activities so that agro-tourism is now widely developed in several regions.

The agribusiness approach is needed to overcome the problems of dairy cows, being able to manage issues in the upstream, production, and downstream sectors. Banyumas Regency is one of the centers of dairy cattle development in Indonesia. However, the results of Hidayat's research (2019) reported that dairy cows in Banyumas District experienced an increase but were very slow, indicative of a very low coefficient of determination (R2 = 0.0465).

Therefore, more optimal efforts are needed to increase the productivity of dairy cows in Banyumas Regency, and it is necessary to develop a comprehensive development strategy, starting from identifying the leading commodities. According to Hartono (2012), the LQ method could identify the leading commodities in an area. Meanwhile, Rustiadi et al. (2011) stated that the base region is a determining factor in economic development.

Based on the LQ index, a strategic plan is then prepared using a SWOT analysis. The preparation of a strategic plan using SWOT analysis. According to Santosa et al. (2013), the drafting strategy for developing dairy cows can be used using the SWOT matrix. Purnomo et al. (2017) mention that the SWOT matrix clearly illustrates the internal factors of the development of cattle business combined with external factors so that alternative formulation strategies of business development strategies are producible.

Materials and Method

The research method used was survey and observation method. Data comes from the results of in-depth interviews with dairy farmers and direct observations. Secondary data were obtained from various local government offices such as Bapedalitbang Banyumas, Livestock and Fisheries Office, Central Statistics Agency (BPS) of Banyumas Regency, and sub-districts of Banyumas Regency. The sample location was chosen by the Purposive Sampling method (deliberately). Samples of farmers were taken stratified random sampling method disproportionately each district was taken as 20 farmers as samples, with a total sample of 60 farmers.

After the data was collected, an analysis of the potential and problems of developing dairy cattle agribusiness in Banyumas Regency was followed by mapping the basis of dairy-based

agribusiness development in Banyumas Regency and formulating a strategy for developing dairy cattle agribusiness in Banyumas Regency. Simple statistical analyzes were reported descriptively, SWOT analysis and LQ (Location quotient) analysis, with the formula of Hendarto (2000), Rustiadi et al. (2011), Sarpintono et al. (2015) as follows:

$$\text{LQ prod} = \frac{A/B}{C/D}$$

A: Sub district dairy population
B: District dairy population
C: Total ruminant population in sub district
D: Total ruminant population in district level

Preparation of a strategic plan for the development of dairy cattle using a SWOT analysis, SWOT analysis covering strengths, weaknesses, opportunities, and threats are used to evaluate external conditions (industry) and internal conditions (breeder businesses).

Results and Discussions
Overview of Dairy Farming

Dairy farms in Banyumas Regency are mostly community farms. The management system that is carried out is still traditional. According to Fajri et al (2016), the most dominating dairy farming business in Indonesia is people's farms with maintenance management carried out still for generations. That is, what was done by his parents used to be followed by his successors until now. Dairy farmers in Banyumas Regency are members of the Satria Dairy Farmers Cooperative (Pesat). The population of dairy cows in Banyumas Regency is experiencing a stagnant development, even tends to decline because the dairy cow business is less attractive to the younger generation, so when parents are unable to continue the business of dairy cows, there is no successor.
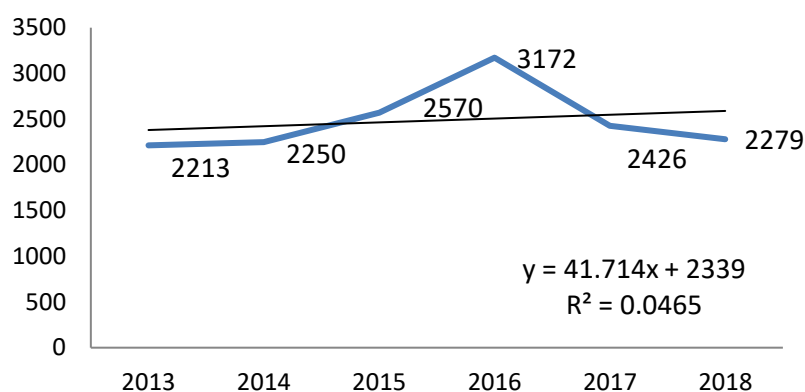
Figure 1. Trend of Dairy Population in Kabupaten Banyumas

Dairy cattle in Banyumas Regency are not in all districts; from 27 sub-districts only 17 sub-districts have dairy cattle, even down to nine in 2018. The main districts for the development of dairy cows in Banyumas Regency are Baturraden, Pekuncen, Sumbang, Cilongok, and Karanglewas Districts. The trend of dairy cow population development in Banyumas Regency is presented in Figure 1 where the development of dairy cattle population in Banyumas Regency is not encouraging but rather, stagnant. Between 2013 and 2016 experienced the highest increase in 2016, but after that, it fell back. This condition was due to the addition of dairy cows at BBPTU Baturraden (Table 2) that Baturraden District in 2016 received 591 additional cows, but followed by a 780 decline in 2017. Allegedly, in 2016, there was a drop in cattle from abroad which was then distributed again the following year to outside of the region.

The tabulation of the data obtained during the study shows some characteristics of the respondents' situation presented in Table 1. Farmer characters show that the average ownership is still limited to 4.12 ST. This is very

possible due to limited forage which makes it difficult for farmers to obtain forage. Furthermore, milk production trends are presented in Figure 2.

Potency of Dairy Farming in Banyumas

LQ analysis is a statistical model that uses the characteristics of a sector to determine the specialization of a region in a particular sector. It determines whether a sector in an area falls into the base or non-base sectors. Population concentration criteria are often used to select potential areas for dairy cattle development (Santosa et al., 2013). It takes an amount of data on the livestock population to perform LQ analysis. In this study, the LQ index population is calculated by comparing the number of dairy cattle in a district with the number of dairy cattle in Banyumas Regency divided by the number of ruminant animals in a district divided by the number of ruminants in Banyumas Regency. In Banyumas Regency, not all districts have ruminants, so the LQ value is equal to 0. Table 2 presents the LQ index of the dairy cattle business in Banyumas Regency.

Table 1. Dairy farmer characteristics

No	Characteristics	Average
1	Farm size	4.12 AU
2	Daily forage per head	34.5 kg/head/day
3	Daily concentrate per head	6.4 kg/head/day
4	Manhours	2.49 hours
5	Farming experience	15.5 year
6	Lactation period	2.8
7	Milk production	10.8 lt
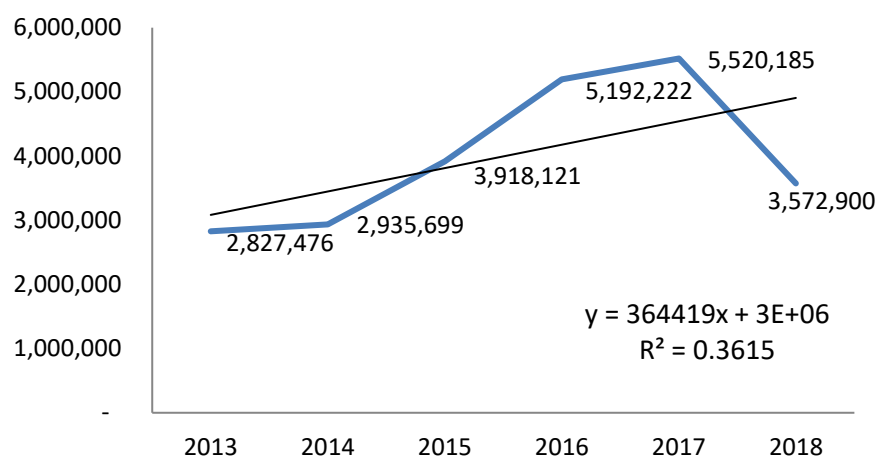
Figure 2. Trend of milk production

Table 2. LQ Analysis of Dairy Farming in Kabupaten Banyumas

Kecamatan	Population	LQ
1. Wangon	34	0.19
2. Pekuncen	394	3.41
3. Cilongok	81	1.01
4. Karanglewas	78	5.16
5. Kedungbanteng	49	1.37
6. Baturaden	1,464	22.73
7. Sumbang	145	0.78
8. Purwokerto Utara	34	6.98
Banyumas District	2,279	

Table 2 shows that only six districts in Banymuas Regency only had an LQ value of 1.00. Baturraden District is the main base for developing dairy cows in Banyumas Regency (LQ of 22.73) but most dairy cows in Baturraden District are owned by BBPTU-SP. Furthermore, North Purwokerto Subdistrict is also a base area, but most of the livestock belong to the Faculty of Animal Husbandry UNSOED, so it is not a potential area to be developed. The other potential areas are Pekuncen, Karanglewas, Kedungbanteng, and Ciolongok Subdistricts, in which farmers own all the cattle for breeding.

Strategy for Dairy Farming Development
Analysis of dairy cattle development efforts includes an analysis of the internal environment (strength and weakness variables) and an external environment analysis (opportunities and threats variables) (Santosa et al., 2017). The first step in the SWOT analysis is the IFAS (Internal Factors Analysis Summary) matrix, identifying strengths and weaknesses as the internal factors in the development of dairy farming. The next step gives weight to each identified factor by holding opinions from the experts on dairy cows through FGD (Focus Group Discussion). The identified factors are then rated based on the income of the respondent. The results of a SWOT analysis of the development of the dairy cattle business in Banyumas Regency are illustrated in Tables 3 and 4. The results of IFAS analysis in Table 4 show that the most influential internal factor in the development of dairy cattle business in Banyumas Regency is that dairy cattle business is a hereditary business (score 0.9412); therefore, it becomes a family business that must be conserved. Meanwhile, the most prominent weakness is the low number of voting factors (score 0.6667), so the business is inefficient, especially if the composition of lactation cattle is small.

Tabel 3. IFAS (*Internal Factors Analysis Summary*) of Dairy Farming in Banyumas.

NO	Internal Factor	Score	Rating	Total
STRENGTH				
1	Over generation experience	0.235	4	0.9412
2	Sufficient productivity	0.176	3	0.5294
3	Farming experience	0.235	3	0.7059
4	High kohesiveness	0.235	3	0.7059
5	Support from local government	0.118	2	0.2353
	Total	1.0000		3.1176
WEAKNESS				
1	Less farmer regeneration	0.1333	3	0.4000
2	Limited funding	0.1000	3	0.3000
3	Limited technology	0.1000	3	0.3000
4	Limited willingness to access info	0.1333	3	0.4000
5	Limited grassland	0.1333	3	0.4000
6	Small farm size	0.1667	4	0.6667
7	Side job	0.1333	3	0.4000
8	Limited formal education	0.1000	2	0.2000
	Total	1.0000		3.0667

Tabel 4. EFAS (*Eksternal Factors Analysis Summary*) of Dairy Farming in Banyumas

NO	External factor	Score	Rating	Total
EXTERNAL				
OPPORTUNITY				
1	Market guarantee	0.1667	3	0.5000
2	Availability of transport	0.1250	3	0.3750
3	Member of cooperatives	0.1250	3	0.3750
4	Product development	0.1667	3	0.5000
5	Extension services from government	0.0833	2	0.1667
6	Increasing demand	0.1667	3	0.5000
7	Link to agrotourism	0.1667	4	0.6667
	Total	1.0000		3.0833
THREATS				
1	Low milk price	0.1852	3	0.5556
2	Expansion of settlement	0.1481	3	0.4444
3	Disease risk	0.1111	2	0.2222
4	Milk quality risk	0.1111	2	0.2222
5	Plenty alternative milk	0.1481	3	0.4444
6	Milk import	0.1481	3	0.4444
7	Low forages quality and quantity	0.1481	3	0.4444
	Total	1.0000		2.7778

The total score of strength was 3.1176, while the weakness factor was 3.0667, while the S-W value was 0.051.

The next step in the SWOT analysis is to arrange the EFAS (External Factors Analysis Summary) matrix as an external factor that influences the development of dairy cattle businesses in the form of opportunities and threats. It identifies various opportunity factors that might develop the dairy cattle business well and factors that threaten business continuity. The results of the EFAS analysis are presented in Table 4. The results of the EFAS matrix analysis show that business location factors that

intersect with attractions (score 0.6667) are the most important opportunities that farmers must optimize for business development. The closeness of the business location to the tourist location allows the breeder to develop his business towards a dairy-based agro-tourism business. While the most threatening factor to the development of the dairy cattle business in Banyumas Regency was the low milk price with a score of 0.5556. Low national milk prices

motivate farmers to develop their businesses. The study found that the probability score (O) was 3.0833, the threat factor (T) was 2.7778, and the O-T score was 0.3056.

The SWOT analysis results show that S–W is 0.051 and O–T is 0.3056, indicating that dairy cattle business in Banyumas Regency is currently in quadrant I which is equal to (0.051; 0.3056). The illustration is in Figure 3.
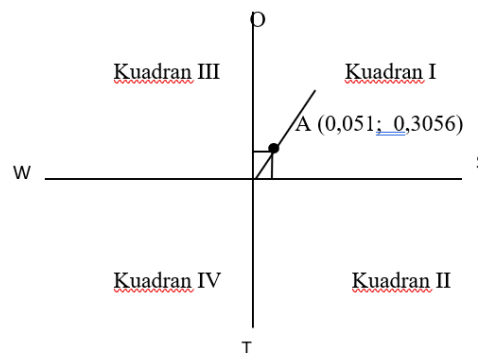

Figure 3. SWOT Analysis of Dairy Farming in Banyumas

Based on the results of the SWOT analysis that the current condition of dairy cattle business in Banyumas Regency is in quadrant I. Then the appropriate strategy for developing dairy cows is the SO (Strength - Opportunity) strategy, which is an aggressive or aggressive strategy of how to use force optimally and take advantage of opportunities exists to increase the productivity of dairy cows. Some strategies for developing dairy cows in Banyumas Regency include optimizing the existing strengths in the form of skills, experience and enthusiasm to increase livestock productivity; utilizing the concern of the government and tertiary institutions as a consulting agency to improve the welfare of farmers; utilizing the comparative advantage in the form of proximity of farm locations to tourist sites by developing products and pioneering dairy-based agro-tourism businesses; and providing trainings for farmers to manufacture dairy products that can be marketed to tourist attractions.

Conclusions

The potential sub-districts as the centre for developing dairy cattle business are Baturraden, Pekuncen, Karanglewas, Kedungbanteng and Cilongok. An aggressive strategy to achieve this may use as much strengths as possible and take the most opportunities available. It is recommended that the development of dairy cattle business in Banyumas Regency be focused in a number of selected districts, namely Baturraden, Pekuncen, Karanglewas, Kedungbanteng and Cilongok.

References

Bradford, RW, JP Duncan, B Tarcy. 2005. Simplified Strategic Planning. Internet Center for Management and Business administration. Inc.

Bamualim, AM, Kusmartono, and Kuswandi. 2009. Aspek Nutrisi Sapi Perah. Pusat Penelitian dan Pengembangan Pertanian. Bogor.

Cunad, HR, AD Pratt and JW Hibbs 1994. Regulation of feed intake in dairy cows. J. Dairy Sci. 47: 54 – 65

Emawati, S. 2011. "Profitabilitas Usahatani Sapi Perah Rakyat di Kabupaten Sleman". Journal Science Peternakan. Vol. 9, No 2: 100-108

Epaphras, A, ED Karimuribo, and SN Msellem. 2009. Effect of season and parity on lactation of Crossbred Ayrshire cows reared under coastal tropical climate in Tanzania www.lrrd.org/lrrd16/6/epap16042.ht m

Hartono, B. 2012. Peran Daya Dukung Wilatah Terhadap Pengembangan Usaha Peternakan Sapi Madura. Jurnal Ekonomi Pembangunan 13(2): 216-326.

Hendarto, RM. 2000. Analisis Potensi Daerah dalam Pembangunan Ekonomi. Makalah Diklat. Fakultas Ekonomi Universitas Diponegoro, Semarang.

Hidayat, NN, E Yuwono, N Hidayat. 2019. Analisis Trend Dan Location Quotient (LQ) Dalam Penentuan Komoditas Unggulan Ternak Ruminansia Di Kabupaten Banyumas. Prosiding Seminar Nasional "Pengembangan Sumber Daya Perdesaan dan Kearifan Lokal Berkelanjutan IX. Purwokerto.

Karnaen dan J Arifin. 2009. Korelasi nilai pemuliaan produksi susu sapi perah berdasarkan test day laktasi 1, laktasi 2, laktasi 3, dengan gabungannya. Jurnal Animal Production 11:135-14

Kusnadi, U, dan E Juarini. 2007. Optimalisasi Pendapatan Usaha Pemeliharaan Sapi Perah Dalam Upaya Meningkatan Produksi Susu Nasional. WARTAZOA Vol. 17 No. 2 Th. 2007

Leclerc, H, WF Fikse, and V Ducrocq. 2005. Principal Components and Factorial Approaches for Estimating Genetic Correlations in International Sire Evaluation. J. Dairy Sci. 88:3306-3315.

Mukson, T, Ekowati, M Handayani, dan DW Harjanti. 2009. Faktor-faktor yang mempengaruhi kinerja usaha ternak sapi perah rakyat di Kecamatan Getasan Kabupaten Semarang. Dalam: Prosiding Seminar Nasional Kebangkitan Peternakan. Magister Ilmu Ternak. Semarang 20 Mei 2009. Fakultas Peternakan Universitas Diponegoro. Hal: 25-37.

Purnomo, SH, ET Rahayu, and SB Antoro, 2017. Strategi Pengembangan Peternakan Sapi Potong Rakyat di Kecamatan Wiryantoro Kabupaten Wonogiri. Buletin Peternakan Vol. 41 (4): 484 – 494.

Rustiadi, E, S Saefulhakim, DR Panuju. 2011. Perencanaan dan Pengembangan Wilayah. Jakarta (ID): Crestpent Press dan Yayasan Pusta Obor Indonesia.

Santosa, SI, A Setiadi, and R Wulandari, 2013. Analisis Potensi Pengembangan Usaha Peternakan Sapi Perah dengan Menggunakan Paradigma Agribisnis di Kecamatan Musuk Kabupaten Boyolali. Buletin Peternakan. Vol 37 (2) : 125 – 135.

Simamora, T, AM Fuah, A Atabany, and Burhanuddin, 2015. Evaluasi Aspek Teknis Peternakan Sapi Perah Rakyat di Kabupaten Karo Sumatera Utara. Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan. Vol. 03 No. 1. Hal 52 – 58.

Sulistyati, M, Hermawan, and A Fitriani, 2013. Potensi Usaha Peternakan Sapi Perah Menghadapi Pasar Global. Jurnal Ilmu Ternak, Vol 13. No 1.