

# The Potential of Beef Cattle Development Area in Gunungkidul Regency

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**Abstract**— This study aims to determine the potential of beef cattle, target and location for the development of beef cattle and the carrying capacity of the area for the development of beef cattle in Gunungkidul Regency. This study used a survey method. The sample was determined based on 4 districts from 3 zones: the southern zone (Seribu Mountains), namely Girisubo District and Tepus District; the middle zone (Ledok Wonosari), namely Wonosari District and the northern zone (Baturagung), namely the Semin District which has different local characteristics and specifications. Each zone is represented by a district that has the largest livestock population. The data obtained were tabulated and averaged, then analyzed descriptively. The results showed that all sub-districts in Gunungkidul district were livestock-dense areas, except for Girisobo sub-district which was included in the very dense category. Based on the Location Quotient (LQ) index, Girisobo and Semin sub-districts have an  $LQ > 1$  index, which means that the two sub-districts are potential base farms. On the other hand, Wonosari and Tepus sub-districts have an  $LQ < 1$  index, meaning that the potential for livestock in the two regions is non-basic, these two areas are not good livestock potentials to be developed because they require supplies from other regions. Meanwhile, the adequacy rate per farmer is 0.63. This means that the area shows a shortage of feed. From the results of the study it can be concluded that based on the criteria for ruminant livestock development areas, all districts in Gunungkidul Regency should be for consumer areas, because based on population density it is categorized as very dense while based on the economic density of livestock it is categorized as dense.

**Keywords**— Potential region, location quotient, beef cattle, Gunungkidul regency.

## I. BACKGROUND

As one of the areas in the southeastern part of the Special Region of Yogyakarta, Gunungkidul Regency has many comparative advantages for the development of almost all livestock commodities. This is because the contours of the area are relatively complete, both from mountains, hills and plains. However, in reality, not all livestock commodities could be developed optimally in this region. Many technical and non-technical obstacles are faced in building livestock in Gunungkidul Regency.

The livestock commodities in Gunungkidul Regency are relatively good, although they are still far from optimal. The support of natural resources and human resources greatly supports the development of livestock more rapidly. In recent years, its development has begun to be felt with the presence of several independent livestock entrepreneurs and partnerships who continue to increase their business in Gunungkidul Regency.

In responding to the very open national market for meat, milk, eggs and fertilizer, it seems that Gunungkidul Regency can participate and take part. However, it is hoped that Gunungkidul Regency can play an increasingly important role in the development of animal husbandry in the Special Region of Yogyakarta along with the increasingly open access to communication and transportation from production sites to processing and consumer areas.

The livestock population in Gunungkidul Regency is evenly distributed in almost eighteen (18) sub-districts which are divided into three (3) zones, namely: the southern zone (Seribu Mountains); the middle zone (Ledok Wonosari) and the northern zone (Baturagung) which have different local characteristics and specifications.

To increase the productivity and quality of livestock products and optimally develop livestock agribusiness, the livestock development requires a master plan as a basis or reference for the development of the farm.

A good and implementative master plan requires proper identification and problems analysis and potentials of the region. Based on the description above, the sector analysis of livestock in supporting the economics in Gunungkidul Regency is very important to be studied in more detail, so that the livestock activities in Gunungkidul Regency could be more empowered and developed. By knowing the potential of the livestock sector, the preparation of livestock development planning in Gunungkidul Regency is expected to be more focused so as to encourage the creation of sustainable development.

## II. RESEARCH METHODS

This study used a survey method in Gunungkidul Regency area. Primary data was collected by sampling method. The sample was determined based on 4 sub-districts from 3 zones: the southern zone (Seribu Mountains), namely Girisubo District and Tepus District; the middle zone (Ledok Wonosari), namely Wonosari District and the northern zone (Baturagung), namely Semin District which has different local characteristics and specifications. Each zone is represented by a district which has the largest livestock population. A sample of 25 respondents was taken from each sub-district, so that the total of 100 respondents from the 4 surveyed sub-districts had been collected.

**Production data measurement.** The data taken include: the type and population of livestock owned by the breeder/community in each sub-district; carrying capacity of natural resources such

as identification of types of food crops grown, production of food crops, availability of forage fodder, amount of agricultural waste; human resources include the identity of the respondent, the purpose of raising livestock, the level of education, the number of families involved, the number of livestock ownership, the area of agricultural land.

*Data Analysis*

The data obtained were tabulated and averaged, then analyzed descriptively. The Location Quotient (LQ) method is used to analyze the state of the area, whether an area is a basic or non-basic, especially in the cattle population. The LQ method is formulated as follows:

$$LQ = SI/NI \quad (\text{Darmawansyah, 2003})$$

Where :

SI = Comparison between the population of certain types of beef cattle (ST) and the population in the same area.

NI = Comparison between the total population of cattle in the region with the total population in the same region.

III. RESULTS AND DISCUSSION

*Farmer Identity and Livestock Density*

The average age of farmers in Gunungkidul is 50.365 years old. Based on the average age of farmers in Gunungkidul area, they are still in the productive age category. This means that they still have the ability to increase their income through the livestock sub-sector.

From the 4 regions based on the age conditions, the average age is relatively the same i.e. 49 - 51 years old.

When examined from the age characteristics above, most of the breeders are in the productive age category. The age factor is usually more identified with work productivity, and if a person is of a productive age, there is a tendency for high productivity. Chamdi (2003) suggests, the younger the age of the breeder, the higher the curiosity about something and the higher the interest in adopting the introduced technology.

When viewed from the level of education of farmers in Gunungkidul the majority of senior high school graduates (40%). In general, the effect of education level is on livestock productivity and livestock orientation.

Based on the condition of the level of education of farmers in the Girisubo and Semin sub-districts as well as the areas where the conditions are most likely for the livestock business development program, in general, in Gunungkidul, based on the level of education, it could possibly change the orientation of raising livestock from traditional to profitable livestock businesses.

Based on the composition of main occupations, farmers in Gunungkidul on average are farmers 48%, entrepreneurs and employees are 23%, and pensionaries are 6%. The profession of farmers is very closely related to livestock ownership, this is because of the use of spare time in addition to being busy as farmers, as well as other professions such as entrepreneurs, employees and pensionaries.

TABLE 1. Research Data

Respondent Identity	Wonosari	Girisobo	Semin	Tepus	Average
Age (year)	51,88	49	49	51,58	50,37
Education (%)					
Elementary School	16	8	8	68	25
Junior High School	48	24	24	20	29
Senior High School	36	60	60	4	40
Diploma 3	0	4	8	8	5
Undergraduate	0	4	0	0	1
Occupation (%)					
Farmer	48	24	24	96	48
Entrepreneur	36	28	28	0	25,5
Employee	16	36	36	4	23
Pensionary	0	12	12	0	6
Purpose of raising livestock (%)					
Savings	84	0	0	32	29
Increase the Income	16	0	8	68	23
Side business		100	92		48
Average number of livestock ownership (UT)					
Cattle	2,1	2,9	2,91	2,01	2,48
Goat	0,36	0,57	0,57	0,45	0,49
Number of livestock ownership (UT)	57,47	82	81,6	58,27	69,84
LQ	0,95	1,02	1,11	0,37	0,86

Generally, they raise livestock as an additional income as well as for the main purpose of producing fertilizer to increase the fertility of their land to be planted. Based on the composition of their work, all professions allow for the improvement of farming through livestock business.

Based on the purpose of raising livestock, farmers in Gunungkidul raise livestock with the aim of saving 29%, increasing income by 23% and as a side business 48%. Based on this condition, in Gunungkidul area generally is still very possible to develop livestock as a business activity, as seen from

the proportion of farmer awareness as a side business. A side business is very possible to become the main business if the existing problems could be overcome such as feed adequacy, market, capital, etc.

The results of research by Murdjito et al., (2011) showed that in Gunungkidul, especially in Giri Sekar, it is a very dry area and close to the forest, so that raising goats is the main source of income for the family, this is also supported by the high mutation rate of livestock that occurs every month.

Based on the number of livestock ownership and types of livestock, generally in Gunungkidul the majority raise cattle, goats and native chickens. The average ownership of cattle in the Gunungkidul community is 2.48 UT, goats are 0.484 UT and native chickens are 14.8. Based on the average ownership of cattle, goats and chickens, it is still possible to evaluate them so that they could become a profitable businesses. Generally only as a side business (48%), with insufficient profits so that it needs an assistance for farmers toward business orientation.

Based on the economic density of livestock, it is known that the Gunungkidul area as a whole is in the dense category except for Girisobo sub-district which is in the very dense category (Table 2, Diagram 1.). An area is said to be dense if the livestock economic density index number reaches the range of 100-300, while very dense the number reaches above 300. Wonosari sub-district has a livestock density number of 173.62, Girisobo sub-district 423.67, Semin sub-district 224.54 and Tepus sub-district 274.36. (Table 2 and Diagram 2).

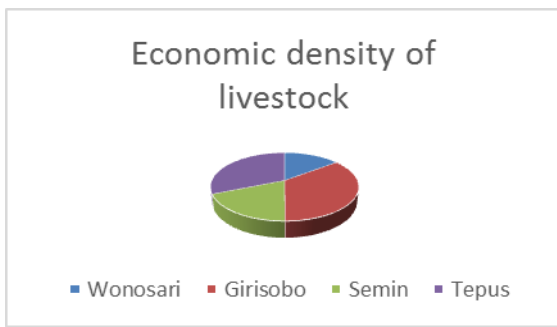


Diagram 1. Livestock economic density

For the category of farming density for the district of Wonosari, Girisobo and Semin are in the dense category with criteria 1-2, while Tepus sub-district is the medium category with the criteria of 0.25-1. All sampling sub-districts fall into the category of very dense on area density (criteria >50).

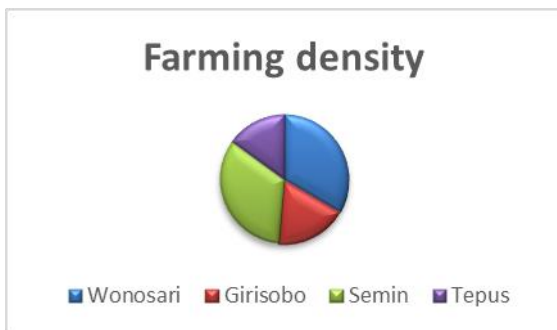


Diagram 2. Farming density

The Location Quotient (LQ) method is used to analyze the state of the area, whether an area is a basic or non-basic, especially in the cattle population.

TABLE 2. Livestock density in Gunung Kidul area

Parameter	Wonosari	Girisobo	Semin	Tepus
LQ	0.95	1.01	1.11	0.37
Economics density of livestock	173.62	423.67	224.54	274.36
Farming density	1.86	1.01	1.87	0.84
Area density	98.91	99.99	75.38	100.00

Based on the Location Quotient (LQ) index, Girisobo and Semin sub-districts have an LQ index > 1, meaning that these two sub-districts are potential livestock bases.

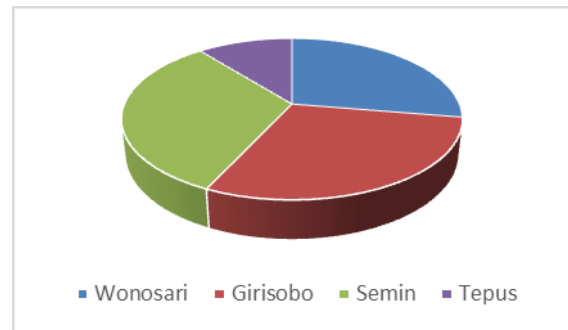


Diagram 3. LQ . Index

The potential of livestock in those two sub-districts is not only developed to meet the needs of their own region, but could also be developed to meet the needs of other surrounding areas.

On the other hand, Wonosari and Tepus sub-districts have an LQ index <1 as shown in Table 2, meaning that the livestock potential in these two areas is non-basic, these two areas are not good livestock potentials to be developed because they require supplies from other areas.

According to Warpani (1984) if  $LQ < 1$ , it is called a non-basic sector, namely a sector whose level of specialization is lower than the level of the reference area.

Based on the criteria for ruminant livestock development areas, Gunungkidul Regency is in the consumer area (Ashari, et al. 1995). Based on these criteria, all sampling districts should be for consumer areas, because based on population density they are categorized as very dense while based on the economic density of livestock is in the dense category.

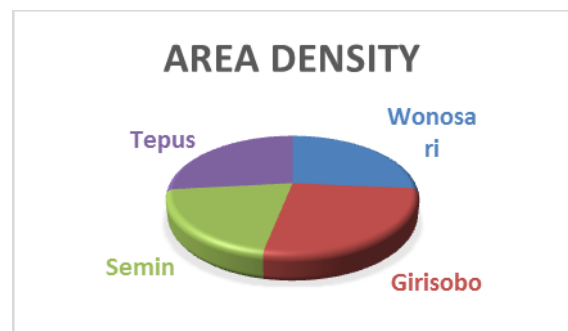


Diagram 3. Area Density

### Feed

Generally, livestock breeders in Gunungkidul provide forage grass types, agricultural waste, *rambanan* from annual plants such as mahogany, teak, glirisidea. The Girisubo and Semin areas are mostly forage from grass, while in Wonosari area is a mixture of grass, agricultural waste and *rambanan*, and so as in Tepus sub-district.

In general, farmers in Gunungkidul in a year meet their animal feed needs only 63% comes from local feed ingredients, while the rest is done by bringing in feed sources from outside Gunungkidul. The result of the research shows that the average

land ownership is 3,403.13 m<sup>2</sup>/farmer. While the average cattle ownership is 2.96 UT, with forage production of 3 kg/m<sup>2</sup> and feed requirement per UT of 30 kg, the adequacy rate per farmer is 0.63. This means the area shows a lack of feed. An adequacy rate < 1 means that the area lacks of animal feed, a number = 1 means the area is balanced between available feed and feed needs, and an adequacy rate > 1 means the area is overfed (Anonymous, 1993).

The results showed that the Gunungkidul area has abundant potential for animal feed, especially during the rainy season. Whether from livestock forage, natural grass, *rambanan*, agricultural waste, and so on. To maintain the availability of quality feed with sufficient quantity of feed throughout the year, it is necessary to manage feed sources during the abundant season or obtain cheaply from outside areas of Gunungkidul through raising awareness to process feed sources into quality complete feed, so that during a long dry season on which it's difficult to obtain the feed, yet the livestock may still get a complete quality feed in addition to getting makeshift forage at that time.

#### IV. CONCLUSION

From the results of the study, it can be concluded that based on the Location Quotient (LQ) index, Girisobo and Semin sub-districts have an LQ > 1 index, meaning that both sub-districts are potential livestock bases. The potential of livestock in these two sub-districts is not only developed to meet the needs of their own region, but can also be developed to meet the needs of other surrounding areas. On the other hand, Wonosari and Tepus sub-districts have an index of LQ < 1, meaning that the livestock potential in both areas is non-basic, these two areas are not good livestock potentials to be developed because they require supplies from other areas. Based on the criteria for ruminant livestock development areas, all sub-districts in Gunungkidul Regency should be used as consumer areas, because based on population density it is categorized as very dense, while based on economic density livestock is categorized as dense.

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