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Analysis of Potential Development of Goat Farming at Bantul Regency, in Special Region of Yogyakarta, Indonesia

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ABSTRACT

The objective of study was to analyze the potential development of goat farming at Bantul Regency, in Special Region of Yogyakarta, Indonesia. The research was conducted from January to April 2023. Data collection were obtained from stakeholder i.e farmers, goat traders, the Central Statistics Agency, the Food Security and Agriculture Office, the Communication and Information Office. These data were collected by using interview, survey, and direct observation. The collected data then were analyzed to calculate; population dynamics, location quotient, growth share, population pressure, carrying capacity and carrying capacity index (CCI). Analysis of the location quotient were five sub-districts which included in the base sector. Analysis of the growth share were Bantul Regency included in the leading sectors. Bantul Regency has not been experienced population pressure. The potential for feed dry matter at Bantul Regency was 82.319,68 tons dry matter/year. There was potential for the development of goats around 17.186,77 animal unit. To a large extent, the Bantul Regency area was obtained CCI values above 2 which was safe criteria. In conclusion, Bantul Regency has good potential in the development of goat. Then, the potential needs support from the government, private sector and the community.

Keywords: Population dynamics, Carrying capacity index, Bantul Regency, Goat farming development

Introduction

The level of goat meat consumption in Indonesia increases along with the growth and development of the population and knowledge of protein needs. Mhlanga *et al.* (2018) states that one type of small ruminant that is currently being developed is goat, which is distributed in various regions. Rahmawati *et al.* (2022) states that many goat farming businesses are managed by farmers or small farmers who live in rural areas. Goats have fast reproduction and good adaptation to various agro-ecosystem conditions. Bantul Regency is one of the regencies in the Special Region of Yogyakarta Province where many people raise goats. With the condition of this fertile area, farming and animal husbandry are the livelihoods that many people do in Bantul Regency. The leading livestock in Bantul Regency are goats, goat livestock has a strategic role in the lives of smallholder farmers in Bantul Regency.

Bantul Regency has a strategic position in Special Region of Yogyakarta because it is located in the south and center of Special Region of Yogyakarta. The fertile soil makes Bantul Regency one of the agricultural regions in Special Region of Yogyakarta. Agricultural land in Bantul Regency has a varied topography, ranging from flat areas dominated by rice fields, hilly areas and areas around the coast. The people of Bantul also have advantages in being suitable for growing and processing food products (Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu, 2023). This indicates that Bantul Regency has the potential to use food crop by-products for animal feed. Munadi *et al.* (2022) states that one of the determining factors in the success of a ruminant livestock business is ensuring the availability of quality food crops and forage.

Rustiadi *et al.* (2011) states that the main pillars of regional planning and development are based on resources, but due to their uneven distribution, the first stage of regional development is identifying existing resources through resource evaluation activities. Evaluation of the potential of an area for the development of goat farming is one step in providing basic information that is important for conceptual planning so as to create a livestock area that is environmentally friendly and that existing resources can be utilized to provide

optimal production. This study was conducted to analyze the potential development of goat at Bantul Regency, Special Region of Yogyakarta.

Materials and Methods

Study area

The research was conducted from January to April 2023 at Bantul Regency, in Special Region of Yogyakarta.

Methods

The research was conducted by collecting primary and secondary data obtained from farmers, goat traders, the Central Statistics Agency, the Food Security and Agriculture Office of Bantul Regency, the Communication and Information Office of Bantul Regency and related stakeholders.

Research variables

Population dynamics. Population dynamics can be determined based on goat population data from 2014 to 2020 from the Bantul Regency Central Statistics Agency using time series analysis**,** with a linear line equation Y=a+bX:

Y = time series data
X = time (year)
a = intercept
b = Regression Coefficient

Location quotient (LQ). Location quotient (LQ) is an analytical technique that is a starting way to determine the ability of an area in a particular sector of activity. The population of goats and ruminant livestock in each sub-district in Bantul Regency obtained from the Bantul Regency Central Statistics Agency was used for analysis material. LQ analysis uses a formula (Sausan et al, 2022) which is as follows:

$$\text{LQ: } \frac{Xi/Xt}{Yi/Yt}$$

Information:
LQ : Location Quotient index
Xi : Goat population in the subdistrict
Xt : Ruminant livestock population in the subdistrict
Yi : Goat population in the district
Yt : Ruminant livestock population in the district.

Growth share. Growth used to determine the growth of each sector. Share used to determine the contribution of a sector's output to the results of all sectors in the study area within one year of production (Sukirno, 1985). The goat population in Bantul Regency and the goat population in Special Region of Yogyakarta Province obtained from the Central Statistics Agency and the Central Statistics Agency of Bantul Regency were used as analysis material. Calculations using the formula from Sukirno (1985).

Formula

$$Growth = \frac{Tn-(Tn-1)}{Tn-1} \times 100$$

Information:
Tn: Number of Population in the n year
Tn-1: Number of Population in the (n-1) year.

Formula

$$Share = \frac{NP_1}{NP_2} \times 100$$

Information:
NP_1: Number of Population in the subdistrict
NP_2: Number of Population in the district

Table 1. Leading sector identification

Sector	Growth	Share
Leading	Positive (+)	Positive (+)
Potential	Negative (-)	Positive (+)
Dominant	Positive (+)	Negative (-)
Static	Negative (-)	Negative (-)

Source: Sukirno (1985).

Population pressure. Data of population number, number of farmers, average annual population increase rate and agricultural land area obtained from the Bantul Regency Communication and Information Office were used to determine population pressure. The population pressure value was calculated using the formula of Soemarwoto (2003):

$$PPt = (1-\alpha\, t).zt.\frac{ft.P0(1+r)^t}{Lt}$$

Information:
PP = Population pressure on agricultural land
t = Calculation time period
z = Land area to support the life of a farmer at the desired level of life, it is 0.73 Ha/person (Nazam *et al.,* 2011)
f = Percentage of farmers in the population
Po = The size of the population at the reference time (person)
r = Average annual population growth rate
L = The area of agricultural land in the concerned area
α = Non-farm income fraction (0,35) (Mantra, 2003).

Classification of population pressure values (PPt):
PPt<1 = The area has not experienced population pressure
PPt>1 = The area has experienced population pressure that exceeds the capacity of the land (critical).

Carrying capacity. Carrying capacity calculated using the general formula, carrying capacity = Total feed potential / Feed requirements 1 AU. The uniformity of the livestock population is carried out by equalizing animal unit (AU), the goats is 0,08 AU (Ashari *et al*., 1999). Food crop land area and food crop harvest area obtained from the Bantul Regency Central Statistics Agency were used as analysis material.

Carrying capacity index (CCI). Carrying capacity index (CCI) calculated from the amount of available animal feed production to the amount of forage needed for a number of ruminant livestock populations in an area. Carrying capacity index calculated based on dry matter with the following formula (Ashari *et al*., 1999):

$$CCI: \frac{carrying\ capacity\ (AU)}{animal\ population\ (AU)}$$

Information:
CCI > 2 indicates the category of availability of feed available safely
CCI 1,5-2 indicates the category of availability of feed available vulnerable

CCI 1-1,5 indicates the category of availability of feed available critical
CCI < 1 indicates the category of availability of available feed is very critical.

Results and Discussion

General description

Bantul Regency is located in the southern area of the Special Region of Yogyakarta Province, bordering the north is Yogyakarta City and Sleman Regency, to the south is the Indian Ocean, to the east is Gunungkidul Regency, to the west is Kulonprogo Regency (Pemerintah Kabupaten Bantul, 2020). Bantul Regency is located between 07° 44′ 04″ – 08° 00′ 27″ South latitude dan 110° 12′ 34″ – 110° 31′ 08″ East longitude (Pemerintah Kabupaten Bantul, 2020). According to the Koppen climate classification, Bantul has a tropical monsoon climate. Rainy season in Bantul Regency from October to March, and the dry season from April to September. The average rainfall in Bantul is 90,76 mm, and the months with the highest rainfall are December, January, and February. Average temperature is 30 degrees Celsius (Pemerintah Kabupaten Bantul, 2020). Administratively, Bantul Regency consists of 17 subdistricts, 75 villages, dan 933 hamlets. The area of Bantul Regency as a whole is 514.493.049 m^2 (Dinas Pertanahan dan Tata Ruang Kabupaten Bantul, 2022).

Population dynamics

Goats are a type of small ruminant livestock that are used as livestock for producing meat, milk, or both (dual purpose) (Budisatria and Udo, 2013). Table 2 is goat population data based on subdistricts in Bantul Regency. Goat population data shows that the goat population tends to increase, only in 2017 there was a significant decline in the population. Sulfiar *et al.* (2022) states that the decline in the livestock population was caused by several factors, including low birth rates, high slaughter and death rates as well as the development of the livestock environment which was increasingly under pressure due to the lack of grazing land. Haryanto *et al*. (2022) states that the potential development of goats needs to be known to estimate the increase in the population per unit of time, so that information can be obtained about the value of changes in the population and goat development programs in the future.

Based on the regression line equation Y= 94.383,86+615,36*X from time series analysis of goat population data from 2014 to 2020, with the estimated technical coefficients being the same, it can be estimated the population of goats in Bantul Regency for the next 7 years there is a tendency to experience an increase in population of around 1.83 percent. Sulfiar *et al.* (2022) states that population dynamics are influenced by birth, death, slaughter, and export-import rates. Population growth is very dependent on population growth and livestock expenditure, either sold or slaughtered.

Regional potential

Regional potential is everything that is owned, namely the natural resources and human resources of an area that can support efforts to improve the welfare of the population in the concerned area and other regions. While the analysis of regional potential can be interpreted as studying scientifically the details of wealth or resources, both physical and nonphysical in a particular area so that it can be developed further (Gatiningsih and Sartika, 2019).

Location quotient (LQ)

Location quotient to identify base or non-base sectors in a region. Basic economic theory clarifies all economic activities into two sectors, namely basic sectors and non-basic sectors. Basic activities are activities of a community whose results, whether in the form of goods or services, are intended for export outside the community or are oriented outward regionally, nationally and internationally. The concepts of technical efficiency and economic efficiency are crucial in the growth of a region's base. Meanwhile, non-based activities are community activities whose results, either in the form of goods or services, are intended for the community itself in the area of the community's

Table 2. Goat population based on subdistricts in Bantul Regency

Subdistrict	Goat population (heads)						
	2014	2015	2016	2017	2018	2019	2020
Srandakan	6.819	7.761	8.745	2.878	2.906	2.723	2.711
Sanden	5.289	6.020	6.783	1.167	1.572	1.680	1.714
Kretek	2.486	2.829	3.188	2.963	2.993	2.791	2.796
Pundong	4.970	5.656	6.374	5.636	5.879	5.702	5.673
Bambanglipuro	3.079	3.504	3.949	4.192	4.191	3.949	3.956
Pandak	4.381	4.986	5.619	5.121	4.801	4.580	4.571
Bantul	4.268	4.857	5.473	5.407	5.567	5.512	5.430
Jetis	3.755	4.274	4.816	4.041	4.041	3.865	3.862
Imogiri	13.612	15.492	17.457	15.457	15.253	16.140	16.034
Dlingo	15.530	17.675	19.917	18.517	18.738	19.342	19.077
Pleret	916	1.042	1.174	1.448	3.908	4.078	4.058
Piyungan	5.837	6.643	7.485	6.898	6.876	7.607	7.587
Banguntapan	1.005	1.144	1.289	908	3.083	3.142	3.131
Sewon	2.241	2.551	2.874	3.596	3.225	3.055	3.074
Kasihan	2.194	2.497	2.813	1.472	3.250	3.050	3.082
Pajangan	5.632	6.410	7.223	5.994	5.536	5.429	5.500
Sedayu	2.355	2.680	3.020	1.500	2.513	2.822	2.848
Total	84.369	96.021	108.199	87.195	94.332	95.467	95.104

Source: Central Statistics Agency of Bantul Regency, 2022.

economic life (Pribadi and Nurbiyanto, 2021). The results of the calculation of LQ for goats can be seen in Table 3.

Table 3. The results of the calculation of the LQ of the goat population in each subdistrict in Bantul Regency

Subdistrict	LQ	Base/non base
Srandakan	0,94	Non base
Sanden	0,65	Non base
Kretek	0,73	Non base
Pundong	1,00	Non base
Bambanglipuro	0,78	Non base
Pandak	0,81	Non base
Bantul	0,68	Non base
Jetis	0,95	Non base
Imogiri	1,16	Base
Dlingo	1,67	Base
Pleret	0,54	Non base
Piyungan	1,31	Base
Banguntapan	0,98	Non base
Sewon	0,85	Non base
Kasihan	1,18	Base
Pajangan	1,01	Base
Sedayu	0,70	Non base
Srandakan	0,94	Non base
Sanden	0,65	Non base

Source: Secondary Data Analysis, 2023.

Based on the results of value calculations LQ there are 12 subdistricts in Bantul Regency which are non-base areas and 5 subdistricts which are base areas. The areas that are included in the base areas are Imogiri, Dlingo, Piyungan, Kasihan and Pajangan subdistrict. Sausan *et al* (2022) states that the commodity or population that produces LQ>1 is a normative standard to be determined as a superior commodity or population, so that it is good for development in the region. The livestock potential can not only be developed to meet the needs of the region itself, but also to meet the needs of the surrounding area.

Growth share

Growth used to determine the growth of each sector, Share used to determine the contribution of a sector's output to the results of all sectors in the study area within one year of production. The way to state whether the contribution is large or not is if share value is $x > 2$ marked with (+) and stated that the contribution made was large and if share value is $1 < x < 2$ marked with (-) and it is stated that the contribution given is small (low) (Sukirno, 1985). The calculation results of Growth Share can be seen in Table 4.

Table 4. Growth Share of the goat population at Bantul Regency

Variable	Value
* Goat population in 2017 (Tn-1)	87.195
* Goat population in 2020 (Tn)	95.104
* Number of population (NP_1)	95.104
** Number of populations in Yogyakarta Special Region Province (NP_2)	416.400
***Growth	9,07
***Share	22,84

Source: * Bantul Regency Central Statistics Agency, 2023, ** Central Bureau of Statistics, 2023, *** secondary data analysis, 2023.

Based on the sector classification considerations in terms of growth rates from 2017 to 2020 and the contribution of commodities for development in Bantul Regency, the results show that the growth value for Bantul Regency is 9.07 which is positive (+) and the share value is 22.84 which is positive (+). Commodity classification can be seen in Table 5.

Table 5. Classification of goat commodities

Variable	Result
Growth	+
Share	+
Classification	Leading

Source: Secondary Data Analysis, 2023.

This location has a good goat livestock growth and a fairly large contribution. Goat farming at Bantul Regency is considered a leading commodity. Goat farming at Bantul Regency has the potential to be developed as adding economic value both for farmers and for the region. Fauzi *et al*. (2019) states that one of the criteria for a superior commodity is that it must be able to become the main driver in the economy, namely that the commodity can make a significant contribution to increasing production, income and expenditure.

Population pressure

The increase in population and reduction in production results in the emergence of population problems which can continue to develop into a phenomenon and the conversion of agricultural land cannot be avoided, and can lead to population explosions, food problems, environmental pollution and reduced supplies of raw materials which are a threat. This threat can cause various kinds of difficulties for the population in fighting for their daily needs or what is called population pressure. Calculation of the value of population pressure in Bantul Regency is presented in Table 6.

Based on the results of the analysis, the average population pressure value in Bantul Regency is 0.46, it means Bantul has not been experienced population pressure. Rohmah *et al*, (2022) states that if the population pressure value or PP <1 means that the area has not been experienced population pressure. Putri *et al.* (2019) states that population pressure is a symptom of overpopulation in an area, considering the availability of resources for the needs of the population, in accordance with the desired standard of living in the area concerned. Associated with the carrying capacity, population pressure occurs when the population in the area concerned has exceeded the carrying capacity. Population pressure needs to be calculated, and the results can be used as a basis for determining development program priorities, so that development development processes and results can touch actual targets. Although not the only absolute measure, at least information on population pressure can be used as a basis for policy makers, both at the regional and central levels.

Table 6. Population pressure in each subdistrict in Bantul Regency

Subdistrict	Po	Number of farmers 2022	f	r	α	L	Z	PP
Srandakan	30981	298	0,96	0,36	0,35	587	0,73	0,33
Sanden	31762	1124	3,54	0,28	0,35	1161	0,73	0,59
Kretek	30583	1407	4,60	0,60	0,35	1422	0,73	0,75
Pundong	35750	974	2,72	0,38	0,35	1025	0,73	0,62
Bambanglipuro	41744	554	1,33	0,43	0,35	1523	0,73	0,25
Pandak	51929	291	0,56	0,48	0,35	982	0,73	0,21
Bantul	64854	300	0,46	0,89	0,35	1009	0,73	0,27
Jetis	58806	495	0,84	0,82	0,35	1324	0,73	0,32
Imogiri	68055	3856	5,67	0,61	0,35	3255	0,73	0,90
Dlingo	45845	6617	14,43	0,50	0,35	4874	0,73	0,97
Pleret	62196	348	0,56	1,19	0,35	1277	0,73	0,28
Piyungan	53000	948	1,79	1,80	0,35	2177	0,73	0,58
Banguntapan	152483	330	0,22	2,44	0,35	1079	0,73	0,50
Sewon	100763	192	0,19	1,44	0,35	1200	0,73	0,19
Kasihan	105208	193	0,18	1,90	0,35	718	0,73	0,37
Pajangan	36941	737	2,00	1,23	0,35	1456	0,73	0,54
Sedayu	48535	315	0,65	0,86	0,35	2807	0,73	0,10
Mean								**0,46**

Source: Secondary Data Analysis, 2023.

Carrying capacity

The carrying capacity of an area with an emphasis on the ability to support and accommodate, is defined as the ability to produce the desired output from basic sources to achieve a higher and more reasonable quality of life (Abadi *et al.,* 2019; Sulfiar *et al.,* 2020). Based on the results of the analysis of the potential of feed dry matter in Bantul Regency in one year is 82.319,68 tons DM/year. The distribution of dry matter production for each subdistrict in Bantul Regency can be seen in Table 7.

Capacity and potential development can be seen in Table 8. Based on the results of feed potential and livestock population, the carrying capacity of livestock of Bantul Regency is 24.795,09 AU, goat population is 7.608,32 AU, so there is potential for the development of goat livestock around 17.186,77 AU.

The value of this potential development can be interpreted that the Bantul Regency area still has remaining feed resources that are able to meet the needs of livestock. Based on the calculation of the carrying capacity index (CCI), most areas get scores CCI above 2 with safe criteria, no areas with vulnerable and very critical criteria were found, only three areas with CCI score 1-1,5 is Imogiri, Dlingo and Pajangan subdistricts, with critical criteria. Based on these results, areas with critical criteria have sufficient feed availability to meet the needs for one year, but the potential of the area still needs to be increased to become the development of livestock areas. Abadi *et al*. (2019) states that the criteria and CCI value is one of the key indicators for livestock development in the region, CCI value above 2 with safe criteria indicates that the area has good land carrying capacity or low livestock population. Conversely, a low CCI value of less than one indicates that the area has low feed carrying capacity with a high livestock population.

Human resources

Human resources is a key factor in everything that supports livestock development. This is because the existence, capacity and capability of human resources in an area will greatly determine the performance and output of the region. Based on human resources in Bantul Regency, the population is 1,013,170 recorded in 559,690 households, consisting of 504,133 male residents and 509,037 female residents. The number of farmers in Bantul Regency is 18,979 (Dinas Komunikasi dan Informatika Kabupaten Bantul, 2022).

Table 7. Feed dry matter production in each subdistrict in Bantul Regency

Subdistrict	Grass	Straw						Total
		Rice	Corn	Sweet potato	Cassava	Peanut	Soy bean	
		(tons DM/year)						
Srandakan	236,53	1.333,50	526,5	0	1,2	336	39	2.472,73
Sanden	393,41	2.997,75	2.529	0	105,6	25,5	15	6.066,26
Kretek	590,49	2.359,00	1.273,5	0	0	90	117	4.429,99
Pundong	533,60	3.246,25	688,5	0.9	0	666	151,5	5.286,75
Bambanglipuro	326,25	3.367,00	1.732,5	0	0	567	84	6.076,75
Pandak	303,61	3.248,00	1.219,5	0	0	51	244,5	5.066,61
Bantul	339,88	3.848,25	468	0	0	43,5	46,5	4.746,13
Jetis	453,41	4.947,25	319,5	0	0	450	13,5	6.183,66
Imogiri	1638,87	3.596,25	301,5	31.8	0	51	37,5	5.656,92
Dlingo	1956,83	3.099,25	1.102,5	274.5	0	97,5	553,5	7.084,08
Pleret	613,66	2.609,25	396	0	0	94,5	7,5	3.720,91
Piyungan	718,71	4.217,50	1.804,5	7.2	0	477	1,5	7.226,41
Banguntapan	371,17	3.423,00	162	0	0	88,5	0	4.044,67
Sewon	391,07	4.826,50	670,5	0	0	238,5	39	6.165,57
Kasihan	300,19	1.660,75	454,5	0	0	21	64,5	2.500,94
Pajangan	345,72	806,75	630	0	0	0	15	1.797,47
Sedayu	315,58	2.959,25	495	0	0	0	24	3.793,83
Total	9.828,98	52.545,50	14.773,50	314,40	106,80	3.297,00	1.453,50	82.319,68

Source: Secondary Data Analysis, 2023.

Table 8. Carrying capacity and potential development in each subdistrict in Bantul Regency

Subdistrict	Feed potential (tons DM/year)	Carrying capacity	Goat population	Potential development	CCI	Criteria
		----------(AU)----------				
Srandakan	2.472,73	744,80	216,88	527,92	3.43	Safe
Sanden	6.066,26	1.827,19	137,12	1.690,07	13.33	Safe
Kretek	4.429,99	1.334,33	223,68	1.110,65	5.97	Safe
Pundong	5.286,75	1.592,39	453,84	1.138,55	3.51	Safe
Bambanglipuro	6.076,75	1.830,35	316,48	1.513,87	5.78	Safe
Pandak	5.066,61	1.526,09	365,68	1.160,41	4.17	Safe
Bantul	4.746,13	1.429,56	434,4	995,16	3.29	Safe
Jetis	6.183,66	1.862,55	308,96	1.553,59	6.03	Safe
Imogiri	5.656,92	1.703,89	1282,72	421,17	1.33	Critical
Dlingo	7.084,08	2.133,76	1526,16	607,60	1.40	Critical
Pleret	3.720,91	1.120,76	324,64	796,12	3.45	Safe
Piyungan	7.226,41	2.176,63	606,96	1.569,67	3.59	Safe
Banguntapan	4.044,67	1.218,27	250,48	967,79	4.86	Safe
Sewon	6.165,57	1.857,10	245,92	1.611,18	7.55	Safe
Kasihan	2.500,94	753,29	246,56	506,73	3.06	Safe
Pajangan	1.797,47	541,41	440	101,41	1.23	Critical
Sedayu	3.793,83	1.142,72	227,84	914,88	5.02	Safe
Total	82.319,68	24.795,09	7.608,32	17.186,77		

Source: Secondary Data Analysis, 2023.

The average age of farmers in Bantul Regency is 52.75 years. Based on these results, the average age of farmers is still in the productive age group according to the opinion of Budisatria *et al.* (2021) which states that the average age of farmers is still within the productive age range, namely between 30 and 60 years. The education level of farmers is dominated by the primary and junior secondary education categories. The main jobs of farmers are dominated by farmers, laborers and traders. Widiastuti *et al*. (2022) states that the low level of education of farmers will affect the management of goat rearing which is still traditional by relying on their experience. The higher the farmer's education, the better the livestock business performance is expected for development. Budisatria and Udo (2013) states that the livestock rearing business carried out by the majority of rural communities is still carried out traditionally as a side business.

The average farming experience is 14 to 21 years. These results indicate the farmer's level of knowledge in managing the goat farming business in accordance with the opinion of Budisatria *et al* (2021) who stated that farming experience is the length of time the farmer has been involved in the livestock business. Breeding experience is one of the characteristics that can influence the success of a livestock business.

The average land ownership of farmers in Bantul Regency is 0.36 ha (Pemerintah Kabupaten Bantul, 2020). Land area in agriculture is very important, because in farming, the narrower the business land, the more inefficient it is (Atmoko *et al*., 2023). Average livestock ownership is 6 to 10 heads. Based on the Regulation of the Minister of Agriculture of the Republic of Indonesia Number 14 of 2020, this ownership is included in micro businesses, namely ownership of less than 15 livestock.

Veterinary medical or paramedical related to livestock health and the development of reproductive technology in livestock development. Available in every animal health center unit in Bantul Regency, one Veterinary Medicine (Veterinarian) as person, 2 paramedical, reproduction technical assistant, pregnancy examiner, inseminator, 4 vaccinator, one administration officer (Pemerintah Kabupaten Bantul, 2022a). Based on data obtained from Pemerintah Kabupaten Bantul (2022b) in the group of breeding and production substances there is a supervisor for the first livestock breeds, three supervisors for feed quality, and a feed analyst.

Social resources

Based on the information of Pusat Penyuluhan Pertanian, Kementerian Pertanian (2023) farmer groups in Bantul Regency is 1493 units, which is divided into 379 novice farmer groups, 423 advanced farmer groups, 367 middle peasant group, 25 main farmer groups and 205 unknown farmer groups. Based on data obtained from Dinas Komunikasi dan Informatika Kabupaten Bantul (2022) livestock herds in Bantul Regency is 1065 units, farmer cooperatives in Bantul Regency is 21 units.

Facilities and infrastructure

Bantul Regency has Agricultural Extension Center which is located at the Department of Food Security and Agriculture, Bantul Regency (Pemerintah Kabupaten Bantul, 2022b). Animal health center consists of 10 service units located in Kasihan, Pajangan, Pandak, Sanden, Pundong, Jetis, Imogiri, Pleret, Dlingo, Piyungan subdistrict. One animal health center unit covers one to two subdistricts (Pemerintah Kabupaten Bantul, 2022a). Bantul Regency have animal market, namely the Imogiri animal market which is the largest animal market in Bantul Regency Karangtalun Village, Imogiri subdistrict. Pandak animal market located in Gedongsari, Wijirejo, Pandak, Bantul Regency. Bakulan animal market located in Bakulan Wetan, Patalan Village, District. Jetis, Bantul Regency, Special Region of Yogyakarta. Pleret animal market located in Kauman, Pleret Village, District. Pleret, Bantul Regency, Special Region of Yogyakarta (Pemerintah Kabupaten Bantul, 2022c). There is

slaughterhouse service units which is located in Segoroyoso (Pemerintah Kabupaten Bantul, 2022d).

Conclusion

The goat population in Bantul Regency tends to increase and has a fairly large contribution to the number of goat livestock in the Special Region of Yogyakarta Province. Bantul Regency has not been experienced population pressure so there is still potential for ruminant livestock development. Bantul Regency has human resources, social resources and infrastructure that can support livestock development.

Conflict of interest

The authors have no conflict of interest to declare. All authors have seen and agree with the contents of the manuscript.

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Author's contribution

The authors confirm contribution to the paper as follows: study conception and design: P, metodology: P, RAN, and BAA, data collection and analysis: RAN and BA, Validation: PA and SA, writing manuscript: RAN and BAA, review manuscript: PA and SA.

Ethics approval

This study was approved by the Administration Committee of Experimental Animals, Universitas Gadjah Mada with Approval number: 0034/EC-FKH/Eks./2020.

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