Volume 13 Nomor 01, Juni 2025
https://doi.org/10.31949/Agrivet.v13i1.13603
E-ISSN : 2541-6154 P-ISSN: 2354-6190
AGRIVET
Jurnal Ilmu Pertanian dan Peternakan

Potential and supportability of forage in Majalengka Regency for sheep farming

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ABSTRACT

This study aims to identified the potential of forage production and analyze land carrying capacity to support sheep farming development in Majalengka Regency. A quantitative descriptive method was employed, involving identification of dominant forage species and estimation of forage biomass production using secondary data from the Central Bureau of Statistics. The analysis included calculating land carrying capacity based on the annual dry matter (DM) requirements of sheep. Results showed that Majalengka Regency has a relatively high diversity of forage species, with average biomass production of 20–25 tons of fresh material per hectare per year, equivalent to 4–5 tons of DM. With an average DM requirement of 1.5 kg per sheep per day, each hectare can support approximately 7–9 sheep annually. This indicates that natural forage and agricultural residues such as rice and corn straw have the potential to sustain sheep farming in the region. Sub-districts with high carrying capacity indices include Maja (3.35), Bantarujeg (3.13), Kertajati (2.43), and Majalengka (2.09), making them prospective centers for sheep farming. Meanwhile, livestock activities remain concentrated in Sindang (2.44), Banjaran (2.20), Panyingkiran (1.88), Argapura (1.56), and Cigasong (1.36), despite their lower feed availability. To optimize forage utilization and ensure feed sustainability, establishing centralized feed storage facilities in Kertajati, Bantarujeg, and Maja is recommended, supporting integration with smallholder farming systems.

Keywords: Carrying capacity, Forage, Majalengka, Sheep, Sustainable livestock farming

INTRODUCTION

Sheep are one of the livestock commodities that have high economic value and great potential in supporting food security and community economic empowerment (Ornelas, et al., 2022). This livestock serves as a source of animal protein, has a relatively fast reproductive cycle, requires a small area of land, and is easily maintained by the community, especially in rural areas. The development of sheep farming is an important strategy in improving the welfare of farmers while encouraging regional economic growth (Annurrofiq et al., 2023) .

Feed availability is a key factor in the success of sheep farming. Forage as the main source of feed plays an important role in supporting the fermentation process in the rumen which affects the growth and productivity of livestock. The obstacle often faced by farmers is the availability of forage which is seasonal and highly dependent on climatic conditions, especially in the dry season. Utilization of potential land for forage production has not been done optimally, so that feed needs have not been fully met.

Majalengka Regency has great potential in the development of sheep farming. Agricultural land, plantations and forest areas are available that can be utilized for the cultivation of forage crops. The growth of the sheep population in this region requires an efficient feed management system based on local potential so that the livestock business can be sustainable.

Agricultural waste such as rice straw, corn leaves, and other crop by-products are abundant resources in Majalengka Regency. Utilization of these wastes as alternative feed is still limited due to lack of technical knowledge and minimal utilization of feed processing technology at the farmer level. The potential of agricultural waste in overcoming feed shortages, especially during the dry season, should be optimally utilized.

An assessment of the feed carrying capacity of the region needs to be conducted to determine the extent to which the availability of feed resources can optimally support livestock populations without causing pressure on the environment (Asriana et al., 2021). Information on carrying capacity is the basis for planning the ideal livestock population and formulating appropriate livestock development policies. Studies on the availability of forage, the potential utilization of agricultural waste as alternative feed, and the carrying capacity of regional feed are very important to conduct. This study aims to analyze the carrying capacity of forage in the development of sheep farming in Majalengka Regency and The results of the study are expected to make a real contribution in supporting the development of productive, efficient and sustainable sheep farming in Majalengka Regency.

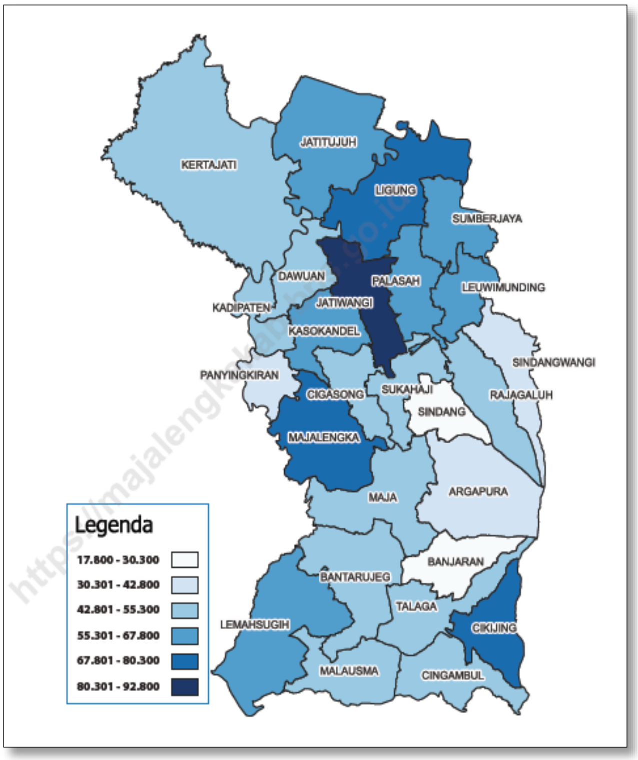

Figure 1. Image of Majalengka Map (Sourcer: BPS, Hasil Perhitungan Proyeksi Penduduk 2024)

RESEARCH METHODS

This research uses a quantitative descriptive method to assess the availability of forage, the potential of agricultural waste as alternative feed, and the capacity of feed carrying capacity for the sheep population in Majalengka Regency. The data used is secondary data obtained from the Central Bureau of Statistics (BPS) of Majalengka Regency (2024). The data analyzed included sheep population, forage land area, agricultural waste production, and feed requirements per head per year.

The analysis method refers to previous research, namely the feed carrying capacity approach and analysis of the potential of agricultural waste as animal feed and feed carrying capacity as well as livestock development potential and carrying capacity index using the following formula:

a. Calculation of natural forage provision (Tanuwiria et al., 2006)
   1) Rice field determined = (0.77591 x Area x 0.06 x 6.083) tons DM/year
   2) Dry land is determined = (1.062 x area x 0.09785 x 6.083) tons of DM/year
b. Calculation of the availability of feed resources from agricultural waste (Muller, 1974)
   1) Rice production (straw) = (2.5 x Area x 0.70) tons DM/year
   2) Groundnut straw (straw) = (2.5 x area x 0.60) tons DM/year
   3) Sweet potato leaves (straw) = (1.5 x area x 0.80) tons of DM/year
   4) Cassava leaves (straw) = (1.0 x area x 0.30) tons of DM/year
c. Calculation of Feed Support Capacity = Total Feed Availability (kg)/Total Livestock Feed Requirements (kg)
d. Minimum animal feed requirement = 6.25 Kg/day or 2.28 tons/year (NRC, 2007)
e. Livestock Development Potential = Feed Forage Support - Livestock Population
f. Feed forage carrying capacity index (FCCI) = feed forage carrying capacity Animal Unit (AU)/ livestock population (AU)
   The status of food carrying capacity based on the Index of Supportability (IS) value is categorized into several levels, namely:
   IS ≤ 1 indicates very critical conditions;
   IS between 1 to 1.5 is classified as critical;
   IS between 1.5 to 2 is categorized as vulnerable;
   and IS > 2 indicates safe condition
g. Location Quation (LQ) = (vi/vt)/(Vi/Vt)
   The LQ method is a method to see whether an area is the basis of a livestock. information on the use of the formula for this method:
   Description:
   vi = Total ruminant population of a sub-district area
   vt = Total population of a sub-district
   Vi = Total population of an area
   Vt = Total population of the region

RESULTS AND DISCUSSION

Identification of regions based on population density and total population

Majalengka Regency is one of the administrative regions in West Java Province that has a strategic geographical position in the eastern part of the province. Administratively, this region is directly adjacent to several other regencies in West Java. To the north, Majalengka Regency borders Indramayu Regency, while to the east it borders Cirebon Regency and Kuningan Regency. Meanwhile, in the south, Majalengka borders Ciamis Regency and Tasikmalaya Regency. The western boundary is Sumedang Regency. This geographical relationship shows that Majalengka is surrounded by areas with diverse topographic and socio-economic characteristics. This geographical location has a significant impact on the dynamics of the Majalengka region, both in terms of infrastructure development, distribution of public services, and cross-regional social and economic interactions. A picture of the Majalengka Region and its population can be seen in the following illustration 1.

In 2024, the population in Majalengka Regency is estimated to be 1,352,541 people. This number consists of 678,206 men and 674,335 women. The sex ratio in that year is 100.6, which means that there are slightly more men than women. The population density of Majalengka Regency in 2024 reached 1,123 people per square kilometer. Each sub-district has a different density level. Kadipaten sub-district is the most densely populated area, at 2,312 people/km², while Kertajati sub-district has the lowest density, at 357 people/km². Majalengka has 26 sub-districts with the distribution of population data in Table 2.

The population in each sub-district in Majalengka Regency is quite varied. The sub-district with the largest population is Jatiwangi, with 92,540 people. This is followed by Cikijing with 70,197 people and Majalengka with 74,107 people. Meanwhile, the sub-district with the smallest population is Sindang, which has only 17,842 people. Large populations are usually found in areas with bustling economic activity and more complete public facilities. On the other hand, some sub-districts such as Panyingkiran and Sindangwangi have lower populations than others, with 33,696 and 35,709 people respectively. This difference in population can be influenced by various factors such as area, geographical conditions, accessibility, and the availability of employment opportunities. One of the employment options for the community is in the livestock sector, which has become a driving factor in the community's economy. The livestock sector, especially in ruminants such as sheep, must be supported by the existence of natural resources that can be utilized by farmers as feed.

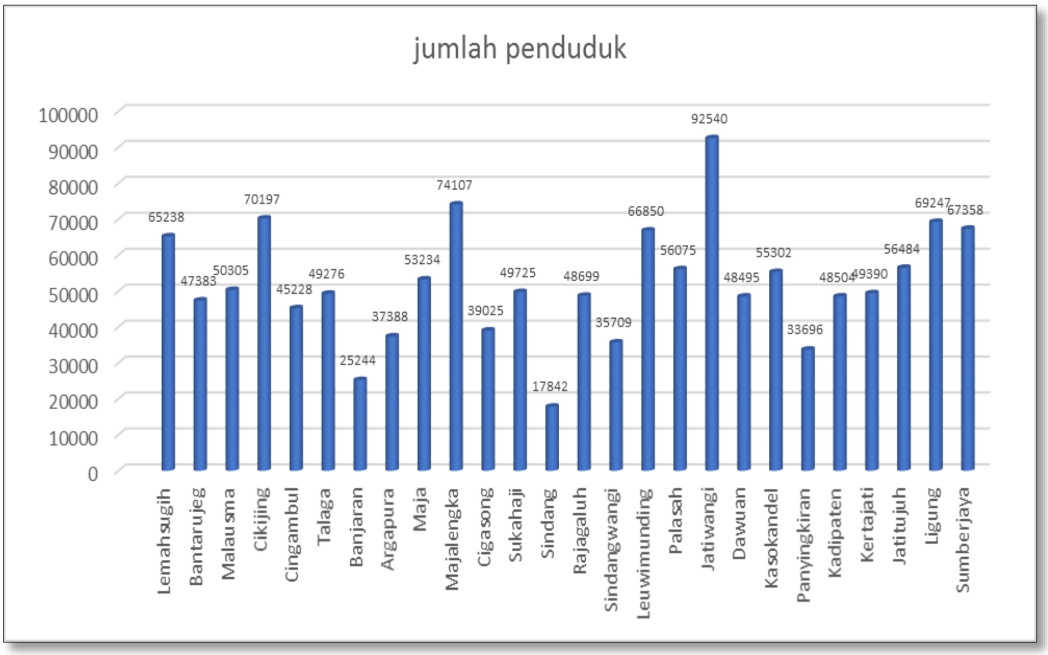

Figure 2. Population by sub-district in Majalengka Regency

Native forage estimation

Native forage is a type of forage that grows and is available directly from nature without the need for intensive cultivation. This forage is very important as a source of animal feed, especially for traditional farmers in rural areas (Lima et al., 2021) . Native forage has the advantage of being easy to obtain and continuous availability, does not require additional production costs, and grows following environmental conditions (Dotulong et al., 2021). In Majalengka Regency, the utilization of natural forage is an important part in supporting livestock activities, especially in ruminants such as sheep. One of the main sources of natural forage comes from rice fields that are not being planted. In addition, rice field bunds are also fertile places for the growth of wild grasses and green plants that can be cut to feed livestock. These areas are easily accessible to farmers as they are generally close to settlements and other agricultural areas.

Natural forage is also commonly found in gardens, community forests and land designated as fodder for natural forage data (Table 1). In gardens and forests, various types of shrubs, field grasses and other wild plants that have good nutritional value usually grow. Meanwhile, fodder forage land that is allowed to grow naturally is maintained in order to provide sufficient feed for livestock. By utilizing these various sources of forage, farmers in Majalengka can meet their livestock feed needs.

Table 1. Natural forage and agricultural waste in various sub-districts of Majalengka Regency

No	Name of Place	Natural Forage Production	Agricultural Waste Potential						Total
			Rice Straw	Corn Straw	Soy Bean Straw	Peanut Straw	Sweet Potato Leaves	Leaves Cassava	
				……………………..…(Ton DM/year)………..……………..					
1	Lemahsugih	1943.32	5542.25	4873.50	520.50	10.50	0	0	12890.07
2	Bantarujeg	1755.67	5671.75	15880.50	0	6	0	0	23313.92
3	Malausma	1171.93	5988.50	3856.50	22.50	3	6	1.80	11050.23
4	Cikijing	1007.62	5804.75	5580.00	240	0	0	3.00	12635.37
5	Cingambul	722.46	3708.25	1215.00	0	0	1.20	1.50	5648.41
6	Talaga	891.91	4663.75	1710.00	0	0	0	0	7265.66
7	Banjaran	497.66	3228.75	2574.00	145.50	0	10.80	0	6456.71
8	Argapura	394.48	1324.75	2641.50	0	0	6	0	4366.73
9	Maja	1280.37	7430.50	20722.50	0	0	128.40	3.60	29565.37
10	Majalengka	1050.43	5479.25	15934.50	3	273	0	0	22740.18
11	Cigasong	644.53	3608.50	855.00	0	0	0	0	5108.03
12	Sukahaji	969.38	5029.50	99.00	0	10.50	22.80	2.70	6133.88
13	Sindang	429.21	2766.75	409.50	0	6	0	1.50	3612.96
14	Rajagaluh	873.96	5050.50	99.00	0	0	0	0.60	6024.06
15	Sindangwangi	596.02	3412.50	360.00	0	0	0	0.60	4369.12
16	Leuwimunding	947.41	5488.00	0.00	0	6	0	0.60	6442.01
17	Palasah	1274.24	8183.00	180.00	0	0	0	0	9637.24
18	Jatiwangi	2061.01	9105.25	13.50	33	0	0	0	11212.76
19	Dawuan	1211.40	7199.50	0.00	0	0	0	0	8410.90
20	Kasokandel	877.41	5362.00	558.00	0	1.5	0	0	6798.91
21	Panyingkiran	523.77	2656.50	405.00	0	6	0	0	3591.27
22	Kadipaten	626.35	3830.75	45.00	0	0	0	0	4502.10
23	Kertajati	3759.36	19017.25	922.50	0	0	0	0	23699.11
24	Jatitujuh	1983.75	10253.25	9.00	0	0	0	0	12246.00
25	Ligung	30.49	14780.50	90.00	0	0	0	0	14900.99
26	Sumberjaya	1346.34	8104.25	0.00	0	0	0	0	9450.59

Source: BPS 2024 data after processing in the research

The significant area of agricultural land and the diversity of food crop commodities have the potential to produce valuable agricultural waste, especially straw and plant leaves. Based on production data and estimates of agricultural waste in tons of dry matter per year (Ton DM/Year), it is known that each sub-district in this region has different production characteristics and waste potential, depending on the type of crop cultivated.

Kertajati sub-district was recorded as the area with the highest natural forage production, amounting to 3,759.36 (tons DM/year), followed by Jatitujuh sub-district 1,983.75 (tons DM/year), Jatiwangi 2,061.01 (tons DM/year), and Lemahsugih 1,943.32 (tons DM/year). The high production rate is correlated with the high potential of rice straw, as seen in Kertajati District with a potential of 19,017.25 (tons DM/year), Jatitujuh at 10,253.25 (tons DM/year), and Ligung although the production is only 30.49 ha, has a very high potential of rice straw, namely 14,780.50 (tons DM/year). This could indicate crop intensification or the potential for multiple harvests on limited land. Besides rice straw, corn straw is also one of the dominant agricultural wastes. Several sub-districts such as Maja, Bantarujeg, and Majalengka show high potential for corn straw, at 20,722.50 tons, 15,880.50 tons, and 15,934.50 (DM tons/year) respectively. This shows that in addition to rice, maize is an important commodity in the region, especially for Kecamatan Maja which, although not the largest rice producer, contributes the highest maize straw potential overall.

The largest producer of rice, however, contributes the highest potential for maize straw overall. The potential waste from other crops such as soybeans and groundnuts is relatively lower and limited. Cikijing and Banjaran sub-districts contribute the highest potential for soybean straw with 240 tons and 145.5 (tons DM/year) respectively. As for groundnut straw, the highest value was found in Majalengka sub-district at 273 (tons DM/year), while other sub-districts showed figures below 15 tons or even nil. Other types of agricultural waste identified were sweet potato leaves and cassava leaves. Although the distribution is uneven, some areas show significant potential, such as Maja Sub-district which has a potential of 128.4 (tons DM/year) of sweet potato leaves. Banjaran and Argapura sub-districts are also noted to have sweet potato leaf potential of 10.8 tons and 6 (tons DM/year) respectively. Meanwhile, the potential of cassava leaves is mostly limited to the range of 1 to 3 tons, with the highest value recorded in Cikijing District 3 (tons DM/year) and Malausma 1.8 (tons DM/year). In general, the potential for agricultural waste in Majalengka Regency shows a fairly wide diversification both in terms of type and quantity. This potential is a great opportunity for the development of downstream agricultural sectors such as waste-based animal feed processing. Integrated utilization of agricultural waste will not only reduce the amount of agricultural waste that is produced.

Potential of sheep in Majalengka Ragency

This research aims to identify the distribution of livestock population, estimated feed requirements, and livestock holding capacity in various sub-district areas in Majalengka Regency with details of the research data obtained can be seen in Table 2.

The results of the analysis show an imbalance between the number of livestock raised and the carrying capacity of the region, which is reflected in the variable livestock capacity. Majalengka sub-district is recorded to have the highest livestock population of 68,090 heads, or equivalent to 4,766.30 livestock units (St), with feed requirements of 43,373.33 tons of dry matter (DM) per year. The livestock carrying capacity in this region is 5,517.48 St, which indicates that this region is still able to accommodate the existing livestock population technically. However, the case is different with sub-districts such as Argapura and Cingambul which show the opposite condition. Argapura has a livestock population of 58,507 heads (4,095.49 St) with a very low carrying capacity of only 282.66 St. Cingambul is similar, with 45,647 heads (3,195.29 St) but a carrying capacity of only 930.56 St. This imbalance indicates that these areas have the potential to experience ecological pressure due to livestock densities that exceed the carrying capacity of the land. Meanwhile, some sub-districts show potential for more sustainable livestock development. For example, Kertajati has the highest livestock carrying capacity among all regions at 14,794.55 St, far exceeding the number of livestock (60,997 heads or 4,269.79 St). This condition makes Kertajati a strategic area for large-scale livestock development or as a location for relocating livestock from other districts that are overpopulated.

Analysis of feed requirements shows that areas with high livestock populations generally also have large feed requirements. Jatitujuh, Jatiwangi and Ligung each require more than 36,000 tons of DM per year, but all three still have relatively good storage capacity (above 3,000 St). This suggests that the region has the potential for sustainable livestock management if supported by an adequate feed management system and livestock infrastructure.

Table 2: Potential for Sheep Livestock Development

No	Name of Place	Sheep Population (rill)	Sheep Population (AU)	Estimated Feed Requirements (Ton DM/year)	Livestock Storage Capacity (AU)
1	Lemahsugih	61429	4300.03	39130.27	3380.69
2	Bantarujeg	46734	3271.38	29769.56	9469.59
3	Malausma	46914	3283.98	29884.22	3048.65
4	Cikijing	55576	3890.32	35401.91	2911.32
5	Cingambul	45647	3195.29	29077.14	930.56
6	Talaga	55711	3899.77	35487.91	1244.79
7	Banjaran	55634	3894.38	35438.86	764.63
8	Argapura	58507	4095.49	37268.96	282.66
9	Maja	55285	3869.95	35216.55	11202.91
10	Majalengka	68090	4766.30	43373.33	5517.48
11	Cigasong	53201	3724.07	33889.04	677.50
12	Sukahaji	43060	3014.20	27429.22	1414.38
13	Sindang	43669	3056.83	27817.15	408.33
14	Rajagaluh	55348	3874.36	35256.68	1002.81
15	Sindangwangi	36490	2554.30	23244.13	758.19
16	Leuwimunding	55116	3858.12	35108.89	1175.53
17	Palasah	48491	3394.37	30888.77	2855.51
18	Jatiwangi	57873	4051.11	36865.10	3771.01
19	Dawuan	53428	3739.96	34033.64	2070.64
20	Kasokandel	58700	4109.00	37391.90	1139.77
21	Panyingkiran	63442	4440.94	40412.55	300.52
22	Kadipaten	49497	3464.79	31529.59	628.02
23	Kertajati	60997	4269.79	38855.09	14794.55
24	Jatitujuh	66626	4663.82	42440.76	3699.18
25	Ligung	60200	4214.00	38347.40	3310.88
26	Sumberjaya	55558	3889.06	35390.45	2490.99

Source: BPS 2024 data after processing in the research

As for sub-districts such as Banjaran and Sindangwangi, although they have livestock populations that are not as large as other areas, the available carrying capacity is very limited (764.63 St and 758.19 St, respectively), which can be an obstacle to optimal and sustainable livestock development. Overall, the results of this study indicate the need for livestock management policies based on zoning and regional carrying capacity. Redistribution of livestock, development of pastures or collective pens, and improvement of feed efficiency are strategic measures that can be considered to maintain a balance between livestock production and environmental sustainability.

Data on the estimated potential for livestock development in 26 sub-districts of Majalengka Regency shows that all areas have exceeded their carrying capacity, marked by negative values in each sub-district. This indicates that the number of existing livestock has exceeded the carrying capacity of the environment, so it is necessary to reduce the livestock population according to the deficit rate in each region. This effort is important to prevent environmental damage, feed scarcity, and a decrease in livestock welfare.

Forage support capacity and central farming areas

The results of the analysis of forage carrying capacity (FCC), sheep population, Forage Carrying Capacity Index (FCCI), and Location Quotient (LQ) value in Majalengka District show varying conditions between sub-districts. This data provides an overview of the balance between the availability of natural feed and sheep population, as well as regional specialization in the sheepna farming subsector. data can be seen in Table 3.

Forage carrying capacity and livestock population In general, Maja sub-district has the highest FCCI value at 12,967.27 St, followed by Bantarujeg (10,225.40 St) and Kertajati (10,394.35 St). The high value of FCC indicates that the region has considerable potential for natural feed resources. However, when compared to the sheep population, some areas such as Argapura and Panyingkiran show a significant imbalance, where the high sheep population is not accompanied by adequate feed carrying capacity. For example, Panyingkiran only has a FCC of 1,575.12 St to accommodate a sheep population of 4,440.94 St, indicating high pressure on local feed resources. This carrying capacity is one of the most important factors for increasing population and successful livestock development in a region (Wenno et al., 2023).

Table 3. Feed Forage Support Index and Central Farming Area

No	Name of Place	FCC (AU)	FCCI	Location Quation
1	Lemahsugih	5653.54	1.31	0.94
2	Bantarujeg	10225.40	3.13	0.98
3	Malausma	4846.59	1.48	0.93
4	Cikijing	5541.83	1.42	0.79
5	Cingambul	2477.37	0.78	1.01
6	Talaga	3186.69	0.82	1.13
7	Banjaran	2831.89	0.73	2.20
8	Argapura	1915.23	0.47	1.56
9	Maja	12967.27	3.35	1.04
10	Majalengka	9973.76	2.09	0.92
11	Cigasong	2240.36	0.60	1.36
12	Sukahaji	2690.30	0.89	0.86
13	Sindang	1584.63	0.52	2.44
14	Rajagaluh	2642.13	0.68	1.13
15	Sindangwangi	1916.28	0.75	1.02
16	Leuwimunding	2825.44	0.73	0.82
17	Palasah	4226.86	1.25	0.86
18	Jatiwangi	4917.88	1.21	0.62
19	Dawuan	3688.99	0.99	1.10
20	Kasokandel	2981.98	0.73	1.06
21	Panyingkiran	1575.12	0.35	1.88
22	Kadipaten	1974.61	0.57	1.02
23	Kertajati	10394.35	2.43	1.23
24	Jatitujuh	5371.05	1.15	1.18
25	Ligung	6535.52	1.55	0.87
26	Sumberjaya	4145.00	1.07	0.82

Forage Carrying Capacity Index (FCCI)

The FCCI is used to assess the balance between feed availability and livestock population. Values >1 indicate that forage availability is sufficient to meet the feed needs of sheep, while values <1 indicate a shortage. There are 10 sub-districts that have a FCCI above 1. Areas that have a FCCI above 1 indicate that the availability of forage in the area exceeds the needs of the existing sheep herd, making it technically capable of sustaining livestock activities in a sustainable manner. Some sub-districts that fall into this category include Maja (3.35), Bantarujeg (3.13), Kertajati (2.43) and Majalengka (2.09). This high index value indicates that the area has great potential to be used as a center for the development of sheep farming, because feed is available in sufficient quantities and even in excess. this is in accordance with the statement of Wenno et al. (2023) that the forage carrying capacity index is safe in an area if it is more than 2. This excess opens up opportunities for increasing livestock populations or even as a buffer area for other areas experiencing feed deficits. This condition also supports the development of a more efficient livestock system, both from an economic and ecological perspective (Wang & Tan., 2022). Therefore, adopting sustainable agricultural practices can help boost both the productivity and income of livestock farmers across various regions (Munaardi et al., 2023). This indicates that these areas have the potential to become centers of sheep farming development because the availability of feed exceeds the needs of livestock. Conversely, sub-districts such as Panyingkiran (0.35), Sindang (0.52) and Cigasong (0.60) experience forage deficits and require additional feed management interventions such as integration of forage cultivation or transportation of feed from other areas.

Location Quotient (LQ) analysis

The LQ value is used to measure the degree of regional specialization of a particular subsector, in this case sheep farming. An LQ value >1 indicates that the region has a comparative advantage in that subsector over the average of other regions. There are several sub-districts with LQ values >1 which means they are quite focused or excel in sheep farming, although not always accompanied by a balance of feed carrying capacity. These areas include Sindang (2.44), Banjaran (2.20), Panyingkiran (1.88), Argapura (1.56) and Cigasong (1.36).

Although the high LQ reflects that the livestock sector is one of the main focuses of the economy in the region, the low FCCI value (below 1) in some of these areas indicates that the high sheep population is not fully supported by the availability of local forage. one of the research results from Surachman et al., (2021) shows that Majalengka Regency is one of the sheep-based areas in West Java Province with an LQ value of 1.3, while when compared to adjacent areas, namely Tasikmalaya and Ciamis regions are non-base areas in West Java Province. This imbalance can lead to the risk of overgrazing, land quality degradation, and dependence on supplementary feed from outside the region. Therefore, although spatially these areas play an important role in contributing to sheep production, there is a need for intervention strategies that target increasing forage productivity, managing livestock populations according to carrying capacity, and strengthening feed distribution and logistics systems.

Interestingly, some sub-districts such as Panyingkiran and Sindang, despite having high LQ, show low FCCI values (<1), indicating that sheep development in these areas is intensive but potentially unsustainable if not accompanied by increased feed availability. In contrast, Bantarujeg, Maja and Kertajati are regions with an ideal combination: high FCCI value, FCCI index >1 and LQ >1. This condition makes these areas very strategic to be used as sustainable sheep farming development areas.

Management implications

Based on the results of the analysis, it can be concluded that the imbalance between FCCI and livestock population is one of the main challenges in managing sheep farming in Majalengka. Areas with low FCCI but high LQ need to be encouraged to improve the feed supply system, both through increasing forage land productivity and providing additional feed. In addition, sub-districts with high FCCI potential and LQ>1, such as Bantarujeg, Maja, and Kertajati, have great opportunities to be developed as sheep farming centers. Policy interventions such as livestock zoning, empowering local farmers, and supporting feed infrastructure are needed to create a competitive and sustainable livestock system.

CONCLUSION

The potential carrying capacity of forage and agricultural waste in Majalengka Regency is substantial to support sustainable sheep farming development. Sub-districts such as Maja, Bantarujeg, Kertajati, and Majalengka show promising prospects as centers for sheep farming development. Currently, sheep farming activities are concentrated in Sindang, Banjaran, and surrounding areas, despite their relatively lower feed carrying capacity. Sustainable feed management and the establishment of centralized feed storage facilities are necessary to ensure consistent feed availability and optimize forage utilization.

CONFLICT OF INTEREST

The author declares that in this journal, Dini Widianingrum is the Section Editor, but does not have the authority to process article acceptance.

ACKNOWLEDGMENTS

The author expresses his gratitude and highest appreciation to all those who have helped during the research process until this scientific article, especially to the Dean and academicians of the Faculty of Agriculture, Majalengka University and Animal Feed Technology Study Program, Department of Agricultural Industrial Technology, Tanah Laut State Polytechnic, and the research success team.

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