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REVIEW ARTICLE Open Access

Evaluation of Land Suitability for Durian Plants (*Durio zibethinus* Murr.) in Wonosalam Village, Wonosalam District, Jombang Regency, East Java, Indonesia

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Abstract

Durian (*Durio zibethinus* Murr.) is a high-value tropical fruit commodity with strong development potential in humid tropical regions such as Wonosalam Village, Wonosalam District, Jombang Regency, East Java. However, durian productivity is highly dependent on land suitability in relation to crop growth requirements. This study aimed to evaluate actual land suitability for durian cultivation based on soil biophysical characteristics. Land evaluation was conducted using the matching method by comparing field and laboratory soil data with durian suitability criteria proposed by Ritung et al. (2011). Observed parameters include temperature, rainfall, humidity, drainage, soil texture, coarse fragments, effective soil depth, base saturation, cation exchange capacity, soil pH, organic carbon, available nutrients nitrogen, phosphorus and potassium, slope, erosion hazard, flood hazard, surface rock, and rock outcrops. The results showed that actual land suitability classes ranged from S2 moderately suitable to S3 marginally suitable. The dominant limiting factors were suboptimal drainage, low nitrogen and potassium availability, and slope-related erosion risk in several land units. The main strength of this study lies in its integrated assessment combining soil properties with farmer land management practices, providing a realistic depiction of durian cultivation potential under current conditions. The findings offer a basis for land use planning and site selection for durian development. It is recommended that farmers and local stakeholders apply integrated soil management practices including drainage improvement, balanced fertilization, liming, and soil conservation measures to reduce limiting factors. These recommendations are expected to improve land suitability, increase durian productivity, and support sustainable land management.

Keywords: Limiting Factors, Matching Method, Productivity, Soil Properties, Sustainability

1. Introduction

Wonosalam Village is one of the areas with the potential for superior agricultural land use in the agricultural and plantation sectors. The agricultural sector, particularly plantation crops, plays a significant role in regional economic development (Firmansyah *et al.*, 2021). Plantation crops such as durian are superior commodities with significant potential to increase farmers' incomes and the local economy. To support the community's economic aspects, the existing agricultural area must be maximized. Without a land suitability evaluation, durian cultivation risks decreased productivity, increased input costs, and land degradation due to land use that does not meet plant growth requirements.

Land evaluation is the process of assessing land resources for specific purposes using proven approaches or methods. Land evaluation is conducted by comparing land characteristics with plant growth requirements (Subhan & Benung, 2020). Determining superior commodities based on land suitability is strategic for optimizing plantation potential in Wonosalam, particularly in Wonosalam Village. It will also assist the government in formulating more targeted regional development policies and farmer empowerment programs.

Efforts to develop superior commodities in Wonosalam Village, Wonosalam District, still face various

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technical and non-technical obstacles. Based on initial observations, approximately 65% of farmers still use traditional planting patterns without considering land suitability aspects. Therefore, evaluating land suitability for determining superior commodities is very important as a basis for more targeted and sustainable plantation development. Land suitability can be assessed based on current conditions (actual land suitability) or after improvements are made (potential land suitability) (Rosmaiti *et al*., 2019). The novelty of this study lies in the integration of the evaluation of land biophysical characteristics with the land management conditions that have been implemented by farmers, thus providing a more realistic picture of the potential for durian development and producing more applicable recommendations for land use planning. By conducting this land suitability evaluation, it is hoped that it can provide appropriate recommendations regarding the types of superior commodities that are appropriate to the characteristics of the land in Wonosalam Village.

2. Material and Methods

This research was conducted from April 2025 to October 2025 in Wonosalam Village, Wonosalam District, Jombang Regency and the Land Resources Laboratory (SDL) of the Faculty of Agriculture, Veteran National Development University of East Java. The research location is at coordinates 7º20'1.97" South Latitude and 112º47'28.21" East Longitude, with an altitude of 6 m above sea level. The average temperature ranges from 25ºC to 33ºC, and the average humidity is 90%.

The tools used in this study included ArcGIS 10.8 software and a set of soil sampling and laboratory analysis tools. The materials used in this study included soil samples, climate data, land use maps, physical condition data and supporting literature, and a table of land suitability criteria. The method used in this study was a survey method, implemented using sampling techniques and analysis of selected soil samples. Sample points were taken from three land use units: rice fields, mixed gardens, and dry fields, with six points for each land use, resulting in a total of 18 sampling points. Determination of soil sampling points is carried out using the *purposive random sampling method* , namely sampling is carried out intentionally with certain considerations, namely based on land use (Figure 1.) At each point, 5 repeat samples will be taken to represent the area. with 3 levels, namely 0-20 cm, 20-40 cm and 40-60 cm, which will later be composited into one.

Field parameters observed for land suitability evaluation include temperature, rainfall, humidity, drainage, slope, soil depth, surface rocks, flood hazard, coarse material, erosion hazard, and rock outcrops. Meanwhile, parameters tested in the laboratory include Texture, Organic C, pH H2O, Base saturation, CEC, Total N, P2O5, and K2O.

Data analysis was performed after the chemical properties were obtained. The data were then tabulated using *Microsoft Excel 2019.* Data on the physical and chemical properties of the soil were entered into a table to facilitate the determination of land suitability classes. Data on the analysis of the physical, chemical and morphological characteristics of the soil were matched *with* a table of land characteristics for durian plants, referring to the quality/land characteristics requirements for the plant according to Ritung (2011).

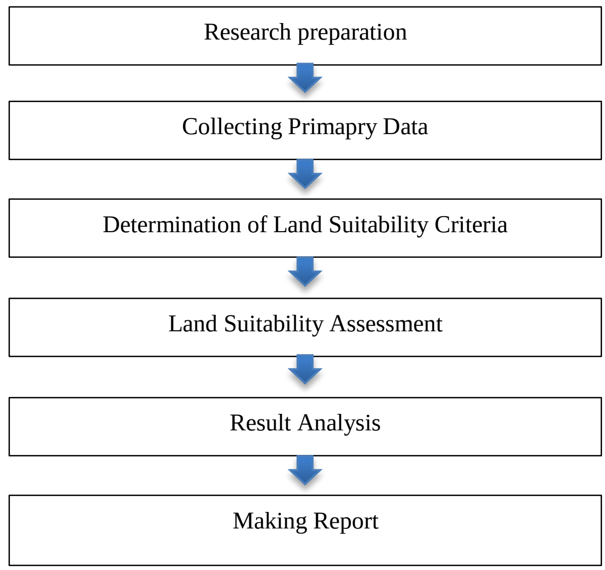

Figure 1. Flowchart of research implementation

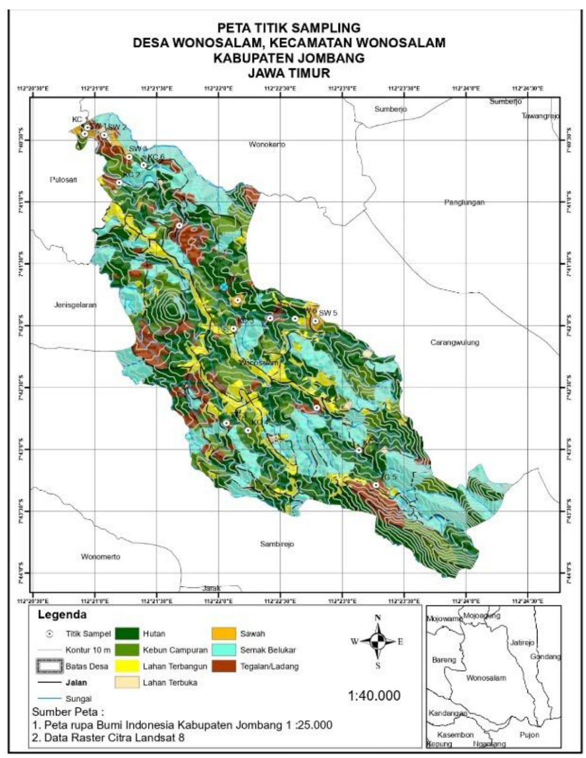

Figure 2. Determining Sampling Points

3. Results and Discussion

3.1. Temperature (tc)

The average temperature across all land units was recorded at 22.31°C, indicating a high degree of uniformity across land units. Durian plants demonstrated a land suitability level of class S2 (moderately suitable). This is due to the optimal temperature requirement for durian plants, which ranges from 25–28°C, making 22.31°C slightly below the ideal growth limit *(Anwar et al.*, 2022). The relatively uniform temperature conditions across the study area indicate that temperature is not a major limiting factor in determining land suitability classes.

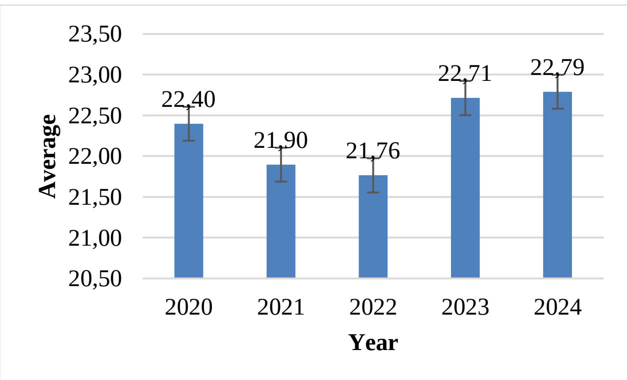

Figure 1 Temperature Graph of Wonosalam Region

3.2. Water Availability (wa)

3.2.1. Rainfall (mm)

Rainfall values across all research land units showed relatively similar figures, namely 3,277.98 mm/year, which is included in the high category and reflects very humid climate conditions (Hannam *et al.*, 2025). Based on the results of the land suitability assessment, rainfall in this range is classified in class S2 (quite suitable) for durian plants. Durian plants have quite good tolerance to high rainfall with an optimal range of 1,500 – 3,500 mm/year so that rainfall at the research location is still within the tolerance limit (Krisanti & Setiawan, 2023) .

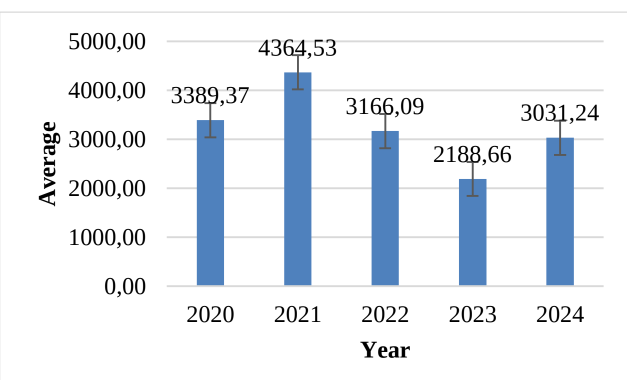

Figure 2 Rainfall Graph for Wonosalam Region

3.2.2. Humidity (%)

The average air humidity across all research land units showed a uniform value of 83.71% for the 18 land units observed in Wonosalam Village. Durian plants obtained a class S1 (Very Suitable) for the air humidity parameter, which indicates that the humidity conditions at the research location are ideal for the growth and productivity of this commodity. According to Kang *et al.* (2022), durian plants have an optimal humidity range of 75-85% according to land suitability criteria for tropical fruit plants, so that 83.71% humidity is right in that ideal range.

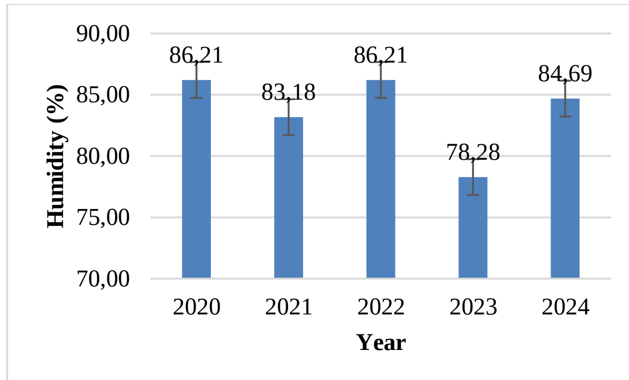

Figure 3 Humidity Graph of Wonosalam Region

3.3. Oxygen Availability (oa)

3.3.1. Drainage

The soil drainage conditions in Wonosalam Village show variations between observed land units, with drainage classes ranging from good to moderately good to moderately fast. Land units with good drainage were found in SW1, SW2, SW4, SW5, SW6, KC4, KC6, and TG2. Land units with moderately good drainage were found in SW3, KC5, TG 1, TG 4, and TG6. Land units with moderately fast drainage were found in KC1, KC2, KC3, TG3, and TG5, indicating soil with faster water permeability and the potential for drought during the dry season.

Land units with good and moderately good drainage received class S1 (Very Suitable) for durian plants. Land units with moderately fast drainage such as in KC1, KC2, KC3, TG3, and TG5 received class S3 (Marginally Suitable) for durian plants. Moderately fast drainage is a significant limiting factor because it can cause the soil to become too dry, especially during the dry season or long periods without rain (Wey *et al*., 2022). The determination of class S3 indicates that although the land can still be used for the cultivation of these four commodities, additional inputs and special management are required to overcome the limiting factor of moderately fast drainage (Nainggolan *et al*, 2025).

3.4. Rooting Media (rc)

3.4.1. Texture

The moderately fine texture class was found in most land units, namely SW1, SW2, SW4, SW6, KC1, KC3, KC4, KC6, TG1, TG2, TG3, and TG6, which covered 12 of the 18 land units observed. The fine texture class was found in land units SW3, SW5, KC2, KC5, TG4, and TG5, which covered 6 land units.

The results of the land suitability evaluation indicate that all land units with moderately fine and fine textures obtained class S1 (Very Suitable) for durian plants. Durian plants, as annual fruit plants with deep root systems, can grow optimally in soil with moderately fine textures because this ensures an adequate water supply during the growth period, especially during the flowering and fruit formation phases, which are very critical to water availability (Zega, 2024).

3.4.2. Coarse Fraction (%)

The coarse fraction content at the study site showed low variation with a dominance of the small category (<15%) in 16 of the 18 land units, including all rice fields (SW1–SW6), most mixed gardens (KC1, KC2, KC4, KC5), and all dry land (TG1–TG6), while the medium category (15–35%) was only found in KC3 and KC6. The evaluation results showed that the coarse fraction provided different suitability classes, where land units with a small coarse fraction obtained class S1 (Very Suitable) because these conditions provided optimal effective soil volume for durian root development (Safira & Rusdiana, 2025). In contrast, KC3 and KC6 with a medium coarse fraction were classified as S2 (Quite Suitable) because the higher coarse fraction content limited the effective soil volume for root growth (Lamadi *et al*., 2025).

3.4.3. Solum Depth

Land units with medium to deep soil depth (95-110 cm) were found in all paddy field units, namely SW1 (100 cm), SW2 (95 cm), SW3 (95 cm), SW4 (110 cm), SW5 (110 cm), and SW6 (100 cm). Land units with very deep soil depth (>120 cm) were found in all mixed garden land units (KC1-KC6) and all dry land units (TG1-TG6).

Land units SW1, SW2, SW3, and SW6 with a soil depth of 95-100 cm obtained class S2 (Quite Suitable) for durian plants. Land units with very deep soil depths (>120 cm), which include rice field units, namely SW4 and SW5, all mixed garden land units (KC1-KC6), and dry fields (TG1-TG6), obtained class S1 (Very Suitable) for durian plants. Soil depths >120 cm are ideal conditions for the growth of fruit plants because they provide a very large soil volume for root system exploration (Mujiyo et al., 2022).

Table 1 Results of Soil Physical Properties Analysis

No.	SPL	Drainage	Texture	Coarse Fraction (%)	Solum depth (cm)
1	SW1	Good	A bit subtle	A little	100
2	SW2	Good	A bit smooth	A little	95
3	SW3	Quite good	Fine	A little	95
4	SW4	Good	A bit subtle	A little	110
5	SW5	Good	Fine	A little	110
6	SW6	Good	A bit smooth	A little	100
7	KC1	Quite fast	A bit smooth	A little	>120
8	KC2	Quite fast	Fine	A little	>120
9	KC3	Quite fast	A bit smooth	Currently	>120
10	KC4	Good	A bit smooth	A little	>120
11	KC5	Quite good	Fine	A little	>120
12	KC6	Good	A bit smooth	Currently	>120
13	TG1	Quite good	A bit subtle	A little	>120
14	TG2	Good	A bit subtle	A little	>120
15	TG3	Quite fast	A bit subtle	A little	>120
16	TG4	Quite good	Fine	A little	>120
17	TG5	Quite fast	Fine	A little	>120
18	TG6	Quite good	A bit smooth	A little	>120

Description: Number of samples = 18, SW = Rice fields, KC = Mixed gardens, TG = Dry fields

3.5. Nutrient Retention

3.5.1. KTK

The results of the soil CEC analysis across all study land units showed varying values in the moderate to high range, ranging from 23.22 to 32.99 cmol(+)/kg. Land suitability evaluation based on CEC parameters showed that all land units obtained class S1 for durian plants. The CEC value of 23-33 cmol(+)/kg found at the study site is within the very suitable range for durian plants (Tang *et al*., 2024).

3.5.2. KB

Land suitability evaluation based on the KB parameter shows varying results for each commodity and land unit. Durian plants show varying suitability classes from S1 to S2, where land units with KB with values >35% such as SW1 - SW6, KC1, KC3, KC4, TG1 - TG3, and TG5 obtained class S1. Land units with KB ranging from 20 - 35%, such as KC3, KC5, KC6, TG4 and TG6, obtained class S2 because the availability of base cations is somewhat limited although still within the tolerable range.

3.5.3. pH

Durian plants showed diverse responses to variations in soil pH at the study site. Land units with near-neutral pH such as SW1, SW2, KC1, KC2, and TG1 received class S1 because the pH was within the optimal range for durian. Several land units with slightly acidic pH, such as SW3-SW6, KC3, KC4, TG2, TG5, and TG6, with pH ranging from 5.0 to 5.5, received class S2. Land units with acidic pH, such as KC5, KC6, and TG4, with pH below 5.0 received class S3 because this pH is too low and can cause calcium and magnesium deficiencies and increase the risk of aluminum toxicity that can damage the durian root system (Oktatora et al., 2025).

3.5.4. C-organic

The organic carbon content across all study land units showed low to moderate values, ranging from 1.26% to 2.29%. Land suitability evaluation showed that all land units obtained class S1 for durian plants, despite their low to moderate organic carbon content. Durian plants require a minimum organic carbon content of 0.8-1.0% for good growth, so the organic carbon content of 1.26-2.29% found at the study site meets the minimum requirement and even exceeds it.

3.6. Nutrient Availability

3.6.1. N-total

The results of the total N analysis at the study site showed that all land units had low to very low nitrogen content. This is in accordance with research by Jeni (2025), which stated that the total N content in the Wonosalam area ranged from 0.09% to 0.11%, which is considered low. This low and very low classification indicates that the soil's ability to supply nitrogen to plants is very limited (Andrade *et al*., 2020).

Land units with low total N content were assigned class S2 (Moderately Suitable) for durian cultivation. Land units KC2 and KC5 with very low total N content were assigned class S3 (Marginally Suitable) for durian cultivation. Low nitrogen content indicates relatively little organic matter in the soil and rapid decomposition due to high rainfall.

3.6.2. P2O5

Land units with very high total P content were found in SW3, SW4, KC2, KC4, KC5, KC6, TG3, and TG5, indicating very abundant phosphorus reserves. Land units with high total P content were found in SW1, SW2, SW5, SW6, KC1, KC3, TG1, TG2, TG4, and TG6, also indicating adequate phosphorus reserves.

Land suitability evaluation based on the total P parameter showed very good results, with all land units obtaining class S1 (Very Suitable) for durian plants. Durian plants require a total P content of at least 15-20 mg P_2O_5 per 100 grams of soil for good growth, so that the high to very high total P content found at the research site has far exceeded the minimum requirements.

3.6.3. K2O

Land units with very high total K content were found in SW1, indicating very abundant potassium reserves. Land units with high total K content were found in SW3, KC5, KC6, TG3, and TG6, indicating adequate potassium reserves. Land units with moderate total K content were found in SW2, SW4, KC3, and TG2. Land units with low total K content were found in SW5, SW6, KC1, KC2, KC4, TG1, TG4, and TG5. Land units with very low total K content were only found in TG4, indicating the most critical conditions. In a study by Jeni et al. (2025), the analysis results showed that the K_2O content in the Wonosalam region was generally low.

Land units with very high to moderate total K such as SW1, SW2, SW3, SW4, KC3, KC5, KC6, TG2, TG3, and TG6 received class S1. Land units with low total K, such as SW5, SW6, KC1, KC2, KC4, TG1, and TG5, received class S2. Land unit TG4 with very low total K received class S3 indicating severe limitations for durian plants. Land units with low to very low total K require intensive potassium fertilization to meet plant needs (Sireesha *et al*., 2021).

3.7. Danger of Erosion

3.7.1. Slope Gradient

Land suitability evaluation based on slope parameters shows that most land units obtained class S1 (Highly Suitable) for durian plants. Land units with flat to gentle slopes (0-8%), such as SW1-SW6, KC1-KC3, and TG1-TG4, obtained class S1 for durian. Land units KC4, KC5, KC6, TG5, and TG6 with rather steep slopes (8-15%) obtained class S2 (Moderately Suitable) for durian plants. This variation in slope reflects the topographic conditions of the Wonosalam Village area, which is located in a hilly area to a mountain slope with undulating relief (Delfianto *et al*., 2021).

3.7.2. Danger of Erosion

Land suitability evaluation based on erosion hazard parameters showed that all land units with low and moderate erosion hazard levels were classified as S2 (Moderately Suitable) for durian cultivation. Land units KC3, TG5, and TG6 with severe erosion hazard levels were classified as S3 (Marginally Suitable) for durian cultivation. At severe erosion levels, much of the fertile topsoil has been lost, and subsoil or even parent rock has been exposed on the surface (Mugiyo *et al*., 2021).

3.8. Flood Danger

The results of the flood hazard assessment at the study site indicate excellent conditions, with most land units experiencing no flooding hazard. Land units experiencing no flooding hazard include all rice paddies (SW1-SW6), most mixed garden land (KC1, KC2, KC4, KC5, KC6), and all dryland land (TG1-TG6). Only one land unit, KC3, experiences a mild flood hazard.

Land suitability evaluation based on flood hazard parameters shows that all land units without flood hazards are classified as S1 (Highly Suitable) for durian cultivation. The determination of the S1 class for flood hazard parameters in 17 of the 18 land units indicates that from the flood hazard aspect, the research location is very suitable for durian cultivation (Kristini *et al*., 2025). The KC3 land unit experiencing mild flood hazards is classified as S2 (Moderately Suitable) for durian cultivation.

Table 2 Results of Soil Chemical Properties Analysis

SPL	CEC (cmol(+)/100mg	KKB (%)	pH	C-organic (%)	N-total (%)	P-total (Mg/100g)	K-total (Mg/100g)
SW1	29.87	52.77	6.31	1.78	0.17	51.20	87.05
SW2	28.25	53.91	5.62	1.86	0.11	57.57	34.04
SW3	27.39	46.37	5.50	2.16	0.18	72.33	44.25
SW4	23.22	55.64	5.33	2.29	0.17	66.58	30.93
SW5	27.91	41.15	5.29	2.14	0.15	56.83	15.06
SW6	25.54	46.53	5.48	2.09	0.16	58.79	17.08
KC1	23.56	51.33	5.63	1.50	0.14	51.38	23.49
KC2	32.99	31.21	5.53	1.32	0.09	126.43	17.64
KC3	24.50	40.99	5.15	1.40	0.10	45.25	39.06
KC4	27.45	38.99	5.29	1.50	0.15	91.61	18.36
KC5	29.93	25.22	4.88	1.56	0.07	95.14	43.84
KC6	26.48	34.76	4.90	1.26	0.14	70.70	50.15
TG1	27.91	45.48	5.51	1.38	0.12	51.48	10.52
TG2	26.01	47.97	5.39	1.56	0.13	60.04	37.11
TG3	26.08	52.49	5.75	1.44	0.12	78.47	50.48
TG4	24.24	23.51	4.36	1.75	0.16	44.19	7.15
TG5	25.52	37.16	5.04	1.93	0.19	74.47	19.47
TG6	28.18	27.67	5.05	1.62	0.15	54.09	10.50

Description: number of samples = 18, SW = Rice fields, KC = Mixed gardens, TG = Dry fields

3.9. Land Preparation

3.9.1. Surface Rocks

The results of observations of surface rocks at the research location showed very good conditions where most land units had very little surface rock content (less than 5%). Only one land unit, namely KC3, had a medium surface rock content (5-15%). In research by Jeni et al. (2025), the condition of surface rocks in the Wonosalam area was classified as very little (<5%), indicating that the soil at the research location had developed well with a fairly high level of weathering.

Land suitability evaluation based on surface rock parameters shows that all land units with surface rock content of less than 5% obtained class S1 (Very Suitable) for durian plants. According to Luo *et al*. (2023), very little surface rock content is an indicator of KC3 land units, with moderate surface rock content (5-15%) obtaining class S2 (Quite Suitable) for all superior commodities.

3.10. Land Suitability for Durian Plants

Land suitability evaluation for durian is the process of assessing and categorizing land based on its suitability for durian growing requirements. Land suitability evaluation for durian is conducted using a matching method between land characteristics at the research location and durian growth criteria, following the principle of minimum limiting factors.

Land suitability analysis includes two important aspects, namely actual land suitability and potential land suitability. Actual land suitability describes the level of land suitability in current conditions without any improvements or additional inputs. In contrast, potential land suitability shows the level of land suitability that will be achieved after efforts to improve limiting factors are made (Hidayat *et al*., 2021). Comparison between actual and potential land suitability is crucial for determining the feasibility of land improvement investments and planning appropriate commodity development strategies (Nabiollahi et al., 2024).

The results of the actual land suitability evaluation for durian plants showed that of the 18 land units observed, 9 land units obtained class S2 and 9 land units obtained class S3. This condition reflects that the biophysical characteristics of the land are still within the tolerance limits of durian plants, but are not yet optimal for producing high productivity (Dang *et al*., 2025).

Land units with class S2 include SW1-SW6, KC4, TG1, and TG2 with various combinations of limiting factors such as temperature, rainfall, nutrient retention, and available nutrients. Paddy fields generally have advantages in terms of pH and base saturation compared to mixed gardens and dry fields due to more intensive management.

Land units with class S3 include KC1, KC2, KC3, KC5, KC6, TG3, TG4, TG5, and TG6 with more severe limiting factors.

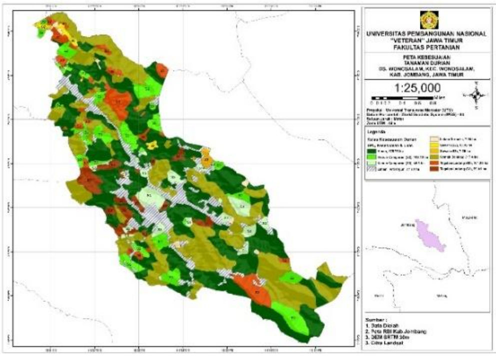

Figure 4 Land Suitability Map for Durian Plants

Improvement efforts undertaken by individual farmers include irrigation, liming, fertilization, mechanical conservation, and drainage improvements, which are strategic steps to address limiting factors that can still be addressed. Liming is necessary to increase pH and base saturation, thereby reducing Al toxicity and increasing nutrient availability for durian plants.

Evaluation of potential land suitability showed that most land units experienced an increase in class after receiving various management actions carried out by farmers, such as liming, fertilization, drainage canal construction, mechanical conservation, and irrigation management. This yield is in line with research by (Al Bana'mah et al., 2021) because these improvement actions directly improve the physical and chemical conditions of the soil, which affect the level of suitability. However, all land units remained in the potential S2 class because they were still influenced by permanent factors such as temperature (tc), high rainfall (wa1), and effective soil depth (rc3) that cannot be improved through farmer management activities.

This increasing pattern is consistent with literature indicating that durian can be cultivated on S2-class land if intensive and sustainable management improvements are implemented (Tan et al., 2024). These results indicate that the study area has high potential for durian development if management strategies are directed at reducing chemical and physical soil constraints that can be improved.

Research (Jeni et al., 2025) shows that the suitability level varies from highly suitable (S1) to marginally suitable (S3) for plantation commodities, with dominant limiting factors including steep slope (N), low K_2O content, acidic soil pH, low total nitrogen (N total) content, and poor drainage.

Table 3 Land Suitability for Durian Plants

No.	Land Unit	Actual Compliance	Repair Efforts	Potential Compatibility
1	SW1	S2tc, wa1, rc3, na1, eh2	Irrigation, drainage, mechanical conservation, liming, fertilization	S2tc, rc3
2	SW2	S2tc, wa1, rc3, na1, eh2	Mechanical conservation, liming, fertilization	S2tc, wa1, rc3
3	SW3	S2tc, wa1, rc3, na1, eh2	Mechanical conservation, fertilization, liming	S2tc, wa1, rc3
4	SW4	S2tc, wa1, nr3, na1, eh2	Irrigation, mechanical conservation, fertilization, liming	S2tc
5	SW5	S2tc, wa1, nr2, na1, na3, eh2	Mechanical conservation, fertilization, liming	S2tc, wa1
6	SW6	S2tc, wa1, rc3, nr3, na1, na3, eh2	Mechanical conservation, fertilization, drainage, irrigation	S2tc, rc3
7	KC1	S3oa1	Irrigation channels, fertilization	S2oa1
8	KC2	S3oa1, na1	Fertilization, irrigation channels	S2oa1
9	KC3	S3oa1	Mechanical conservation, fertilization, liming	S3oa1
10	KC4	S2tc, wa1, nr3, na1, na3, eh1, eh2	Mechanical conservation, fertilization	S2tc, nr3
11	KC5	S3nr3, na1	Mechanical conservation, liming, fertilization	S2nr3, na1
12	KC6	S3nr3	Fertilization, liming, mechanical conservation	S2nr3
13	TG1	S2tc, wa1, na1, na3, eh2	Irrigation, drainage, mechanical conservation, fertilization	S2tc
14	TG2	S2tc, wa1, nr3, na1, eh2	Irrigation, fertilization, liming	S2tc, eh2
15	TG3	S3oa1	Fertilization, liming, drainage channels	S2oa1
16	TG4	S3nr2, nr3, na3	Fertilization, liming, mechanical conservation	S2nr2, nr3, na3
17	TG5	S3oa1, eh2	Mechanical conservation, fertilization, liming, drainage channels	S2oa1, eh2
18	TG6	S3eh2	Mechanical conservation, fertilization, liming, irrigation	S2eh2

Description: SW = Rice fields, KC = Mixed gardens, TG = Dry fields, S2 = Quite suitable, S3 = Marginally suitable, tc = temperature, wa1 = rainfall, rc3 = ked. Solum, nr2 = KB, nr3 = pH, na1 = N-total, na3 = K-total, eh2 = erosion hazard

4. Conclusion

Land suitability evaluation revealed that most of the land in Wonosalam Village is classified as S2 and S3 for durian cultivation, indicating good development potential. The main limiting factors include drainage, nutrient availability (N and K), acid soil pH, slope and erosion hazard. The results of this study provide a scientific basis for land users and policymakers to implement appropriate and sustainable land management to optimally increase durian productivity.

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