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Analysis of Agriculture Land Potential for Fruit Crops in Tejakula District, Buleleng Regency, Indonesia

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Abstract. Tejakula District produces fruits that are very popular with the community, but production is not yet optimal because research on land suitability has never been carried out. The aims of this research are (1) to analyze land characteristics against land suitability classes, (2) to create maps of actual and potential land suitability classes, (3) to plan land use, and (4) to provide information systems. The research used a survey and Laboratorium from March to June 2024, taking soil samples. Actual land suitability class for horticultural fruits in Tejakula District is classified as marginally suitable(S3) to not suitable(N) with limiting factors of rainfall, root condition, pH, N-total, P_2O_5, slope, and erosion hazard. Improvement efforts are made through soil processing, fertilizing with organic, Urea, and Phonska, improving irrigation, and making terraces. Based on the land suitability, the districts of Tejakula, as the priority, are developed to plant mango and mangosteen with quite suitable land(S2) with limiting factor temperature at Pacung, Sembiran, Bondalem, Tejakula, Tembok Village, and another Village moderately suitable(S2) with limiting factor root condition, slope. Kingfruit and Raspberryplant are quite suitable(S2) at Sembiran, Julah, Bondalem, Tejakula, Tembok village, with the limiting factor being temperature, and another Village is moderately suitable(S2) with the limiting factor being rainfall and root condition. Grape and avocado are quite suitable (S2) with the limiting factor of temperature at Pacung, Sembiran, Julah, Bondalem, Tejakula village, another village is moderately suitable(S2) with the limiting factor of root condition and slope. Land use planning by improving irrigation and applying organic fertilizer, Urea, Phonska, and making terracing.

Keywords: land suitability; land use planning; limiting factors; Tejakula District Information System

INTRODUCTION

Tejakula District, Buleleng Regency, Bali Province is one of the districts located in the Eastern part of Buleleng Regency covering an area of 97.69 km^2 and a population of 78.241 people divided into 10 (ten) villages with the following areas: Pacung (6.66km^2), Sembiran (17.79 km^2), Julah (4.71km^2), Madenan (13.73km^2), Bondalem (6.69 km^2), Tejakula (13.96km^2), Les (7.69km^2), Penuktukan (6.25km^2), Sambirenteng (9.40km^2) and Tembok (10.81km2) (Central Statistics Agency, 2021). The Tejakula District produces fruits (mango, mangosteen, kingfruit, raspberry plant, grapes, and avocado) every year. Bali produces mangoes, mangosteens, durians, raspberryplat, grapes and avocados as follows: 55,156 (tons), 24,820 (tons), 25,174 (tons), 18,816 (tons), 11,938 (tons) and 3,325 (tons), while the productivity in a year are: 64.62 (kg. $tree^{-1}$), 159.96 (kg. $tree^{-1}$), 136.97 (kg. $tree^{-1}$), 30 (kg. $tree^{-1}$), 9 (kg. $tree^{-1}$) and 45 (kg. $tree^{-1}$). Production of mango, mangosteen, kingfruit, raspberry plant, grapes, and avocado in Buleleng Regency, according to the Central Statistics Agency in 2021, and in 2022, is: 34,000 (tons), 1,917 (tons), 3,921 (tons), 18,138.14 (tons), 10,193.5 (tons), and 649.2 (tons) (Buleleng Central Statistic Agency, 2022). Based on this data, horticultural crops of mango, mangosteen, kingfruit, raspberry, grapes, and avocado have decreased, but can still be increased according to information on potential land suitability (Ritung et al., 2011). Land suitability evaluation is urgent because there has never been research on land suitability for mango, mangosteen, kingfruit, raspberry plant, grape, and avocado crops (Andriyani et al., 2019; Hartati et al., 2018). Based on this research, it will be possible to provide direction for land use and improvement to increase the

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fruit horticultural production mentioned above. Therefore, this research aims to evaluate the suitability of agroecosystem land in Tejakula District for developing fruit horticultural crops (mango, mangosteen, kingfruit, raspberry plant, grapes, and avocado) (Buleleng Research, 2016).

This evaluation will provide an in-depth understanding of land conditions, identify limiting factors, and detail potential land improvements (Haris et al., 2023). It is hoped that the results of this evaluation can provide a basis for developing sustainable and effective land use directions in fruit-producing areas, such as the Tejakula District, Buleleng Regency, Bali Province, Indonesia.

To overcome the decline in fruit production (mango, mangosteen, kingfruit, raspberry plant, grapes, and avocado), evaluating land suitability for developing the above crops is essential. By understanding land characteristics and identifying limiting factors, this research aims to provide a comprehensive view for sustainable land use planning. Through this approach, it is hoped that an optimal strategy for increasing horticultural fruit production can be produced, improving the welfare of the people of Tejakula District, which has become an icon for fruit production. The research title "Analysis of Agricultural Land Use Potential Through Evaluation of the Land Suitability of Fruits in Tejakula District, Buleleng Regency, Bali Province" reflects the integrated focus and objectives of the research.

METHODS

This research focuses on Tejakula District, Buleleng Regency, Bali Province, with a total area of Tejakula stretching along the North coast of Bali for 27.23 km, with the use of 4,892 ha of dry land, 2,977 ha of plantations, 1.630 ha of forest land, and relatively small rice fields of around 5.00 ha. Other uses cover an area of 269 ha (Buleleng District Government, 2022). Tejakula District is a center for fruit horticulture plants that meet fruit needs in the province of Bali. Research was carried out using a structured method to achieve the main objective, starting with a field survey involving location identification sampling, measuring temperature and rainfall, and taking soil samples based on land characteristics and topography at strategic points.

The soil samples were taken to the Land Resources Laboratory of the Faculty of Agriculture, Udayana University, to analyze soil nutrient content (N, P, K), soil texture, coarse material, depth, CEC, base saturation, pH, organic-C, and salinity. The tools used include thermometer, rain gauge, soil sampling, and necessary laboratory analysis equipment (Zydlik et al., 2024).

The parameters measured involve air temperature, rainfall, air humidity, topographic characteristics, slopes, flood hazards, surface rocks, and rock outcrops as field parameters. Laboratory parameters include soil N, P, K content, texture, CEC, base saturation, pH, organic-C, and soil salinity. Integrating data from field survey results and laboratory analysis is the next step in understanding the existing state of land conditions (Yang et al., 2024; Zydlik et al., 2024).

This research was carried out between March 2024 and June 2024, including field surveys and analysis in the laboratory. The entire series of methods aims to evaluate land suitability for developing fruit plants in the Tejakula District, Buleleng Regency, Bali Province. Thus, this research method was designed holistically to provide depth and detail.

This research began with a field survey, which included identifying sampling locations, measuring temperature, rainfall, and air humidity, and taking soil samples at strategic points based on land characteristics and topography. Soil samples were sent to the Land Resources Laboratory of the Faculty of Agriculture, Udayana University, for analysis of nutrient content (N, P, K), soil texture, CEC, base saturation, pH,

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organic-C, and soil salinity.

Field data includes temperature, rainfall, air humidity, and topographic characteristics. Laboratory data consists of the results of the analysis of soil nutrient content, soil texture, and soil pH. Data integration is carried out to get an overall assessment of land conditions.

Analysis of land suitability for fruit crops (mango, mangosteen, kingfruit, raspberry plant, grapes, and avocado) was conducted by considering field and laboratory data evaluation results. For research purposes, limiting factors were identified to guide sustainable land use in the Tejakula District, Buleleng Regency, Bali Province.

Tools and Materials

Soil drill, pH meter, Abney level, altimeter, field knife, sample ring, plastic bag, filter, pipette, measuring cup, test tube, scale, Erlenmeyer oven, and QGIS 3.14, HP are used. Indonesian Earth Map, DEM (digital elevation model) map interpretation, satellite imagery, chemicals for laboratory analysis, and soil samples are the resources used in this research.

Research methods

This research used survey methods and soil analysis in the laboratory. This survey method is used to obtain the existing conditions on the land in each homogeneous land unit (SLH) and to determine sample points using a purposive sampling technique. Land suitability classification is carried out using a land suitability assessment system according to the criteria of Ritung et al. (2011) by matching the growing conditions of the plants being evaluated (mango, mangosteen, kingfruit, raspberry plant, grapes and avocado) with data on the characteristics of land in Tejakula District, Regency Buleleng, Bali Province. Stages of Research Implementation:

Literature review

This stage involves collecting research-related literature and preliminary surveys or field checks.

Secondary Data Collection

Literature about the research subject and the product being evaluated is collected at this stage. As supporting data for research and data analysis, we need secondary data. Maps required for research, evaluated crop growth needs, climate data, geographic data, land use, and other data are collected.

Delineation of Homogeneous Land Units

Overlayering maps of slope, soil type, and land use to produce homogeneous land units (SLH).

Preliminary Survey

A preliminary survey was carried out to determine the suitability of the depicted homogeneous land units (SLH) to conditions in the field. Corrections are required after a survey is conducted and discrepancies between the homogeneous land units (SLH) and the actual situation are found. Rearrangement based on field conditions is the intended need for improvement.

Field Surveys and Soil Sampling

Field surveys are carried out to see the physical properties of land in the field, such as: drainage, air humidity, slope, erosion hazards, long-term and high inundation, surface rocks, rock outcrops, conservation techniques, land management, and adequate depth. Sampling was carried out at each homogeneous land unit (SLH) (Mahmud, 2022). Sampling in sloping areas is carried out using transects on the upper, middle, and lower slopes. Sampling of the flat regions is carried out via a grid. Samples were taken to depths of 0-30 cm and 30-60 cm. The soil samples are composited for analysis in the laboratory.

Soil Analysis Stage

The parameters used to determine the nature or characteristics of soil from samples analyzed in the laboratory are: P and K using the Bray-1 technique ($mg100g^{-1}$), Salinity ($mmhos.cm^{-1}$) using the electrometric conductivity technique, CEC ($me100g^{-1}$) and Base saturation(%) using the NH4OAc extractor technique, soil texture using the pipette technique, organic-C, using the Walkley and Black technique (%) and N-

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total using the Kjeldahl technique (%).

Tabulation and Data Analysis

The results of observations of physical properties in the field and data from laboratory analysis are tabulated in table form to make it easier to interpret data, analyze data, and evaluate land suitability.

Land Suitability Assessment

The matching method is used in suitability evaluation, namely comparing land characteristics with the requirements for growing plants (Ritung et al., 2011). Until the subclass level, land suitability assessments are carried out to study limiting factors and opportunities for improvement.

Land Suitability Map

The land suitability map was made after obtaining the results of land suitability evaluation for mango, mangosteen, kingfruit, raspberry plant, grape, and avocado.

Determining Land Use Directions

The results of actual and potential land suitability assessments are used to determine how land should be used and managed to maximize the benefits of land use for the crop commodities being researched. Land use directions are made based on the suitability of the land (agroecosystem), limiting factors, and land improvement efforts for each type of plant whose land suitability is evaluated.

RESULTS AND DISCUSSION

From Table 1, it can be seen that the Tejakula District has an average temperature of between 29^{o}C to 33^{o}C. Rainfall in this area varies, ranging from 1,188 mm year^{-1} to 1,645 mm year^{-1}, and air humidity is 83%. Nutrient retention, including CEC, is classified as low to very high, base saturation is very high, pH is neutral to slightly alkaline, and organic-C is low to high; these elements indicate the soil's ability to store nutrients. Soil quality is determined by organic matter, soil pH, and nutrient content. The N-total and P-available contents were very low, while the K-available ranged from moderate to high. Salinity in the Tejakula District is very low.

The slopes in the Tejakula District have variations, from flat to steep. The erosion hazard also varies, ranging from very light to heavy. There is no significant danger of flood hazard or the presence of surface rocks and rock outcrops in this area.

Thus, the characteristics and quality of land in the Tejakula District show variations that can influence the potential for land use, agriculture, and environmental preservation. This analysis provides a comprehensive understanding of land properties that can be used as a basis for sustainable land management in the region (Dewi et al., 2021; Levin et al., 2019).

Evaluation of Agroecosystem Land Suitability

The results of matching the characteristics of each homogeneous land unit (SLH) with the growing conditions for mango, mangosteen, kingfruit, raspberry plant, grape, and avocado are the basis for the results of assessing actual and potential land suitability for fruit horticultural crops which were evaluated in Tejakula District using technical instructions for Land Evaluation for Commodities Agriculture (Arifianto & Ismail, 2023; Ritung *et al*., 2011).

The suitability of the actual land area is not suitable (N) for mango plants in Madenan Village, marginal (S3) is in Julah, Les, Penuktukan, Sambirenteng, and Bawah Villages, with the limiting factors of rainfall, texture, N-total, P-available, pH, organic-C, slope, erosion hazard, and temperature. In contrast, potential land suitability is quite suitable according to S2, with the only limitation being temperature in the Pacung, Sembiran, and Tejakula villages (Ibarra-Garza et al., 2015; Kagimbi et al., 2024; Liu et al., 2023).

The actual land suitability is not suitable (N) for mangosteen plants in Madenan Village, marginal (S3) is in Pacung Village, Sembiran SLH XI, Les, Penuktukan,

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Sambirenteng, and Wall, with limiting factors of rainfall, texture, N-total, P-available, pH, organic-C, slope, erosion hazard, and temperature, while potential land suitability is quite by S2, with the only limitation being temperature in the village of Pacung, Sembiran, Bondalem, and Tejakula.

Table 1. Data on the characteristics/quality of land research

No.	Homogeneous land units (SLH/ Village)	Land Characteristics						
		Water Available (wa)		Drainage	Root Conditions (rc)			
		Temperature (tc)	Rainfall (wa1)	Humidity(wa2)	(oa)	Texture (rc1)	Coarse Material (rc2)	Soil Depth (rc3)
		ºC	mm. year^{-1}	%			(%)	cm
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	SLH I/ Pacung	29-33	1,188	83	baik	Sandy clay loam (SCL) (bf)	5-10	>100
2	SLH II/ Sembiran	29-33	1,372	83	baik	Sandy clay(SC) (f)	5-10	>100
3	SLH III/ Julah	29-33	1,506	83	baik	Sandy Clay Loam(SCL) (bf)	5-10	>100
4	SLH IV/ Madenan	29-33	1,645	83	baik	Loam sandy(LS) (r)	5-10	>100
5	SLH V / Bondalem	29-33	1,299	83	baik	Clay loam (CL) (bf)	5-10	>100
6	SLH VI/ Tejakula	27-33	1,299	83	baik	Clay loam (CL) (bf)	5-10	>100
7	SLH VII/ Les	29-33	1,220	83	baik	Sandy loam(SL) (br)	5-10	>100
8	SLH VIII/Penuk-tukan	29-33	1,589	83	baik	Sandy loam (SL) (br)	5-10	>100
9	SLH IX/Sambi-renteng	29-33	1,589	83	baik	Sandy loam (SL) (br)	5-10	>100
10	SLH X/ Tembok	29-33	1,319	83	baik	Sandy loam (SL) (br)	5-10	>100
11	SLH XI/Sembiran	29-33	1,372	83	baik	Sandy clay loam(SCL) (ah)	5-10	>100
12	SLH XII/Tembok	29-33	1,319	83	baik	Sandy loam (SL) (br)	5-10	>100

Description: SLH (Homogeneous land units), bf (bit fine), f (fine), s (moderate), br (bit rough), r (rough)

The actual land suitability is not suitable (N) for kingfruit in Pacung, Madenan, and Les Villages, marginal (S3) in Sembiran Village, Penuktukan, Sambirenteng, and with limiting factors of rainfall, texture, N-total, P-available, pH, organic-C, slope, erosion hazard, and temperature. In contrast, the potential land suitability is quite suitable according to S2, with the only limitation being temperature in Sembiran village, Julah, Bondalem, and Tejakula.

The actual land suitability is not suitable (N) for the raspberry plant in Pacung, Madenan, and Les Villages, marginal (S3) is in Penuktukan, Sambirenteng, and Bawah Villages, with the limiting factors of rainfall, texture, N-total, P-available, pH, organic-C, slope, erosion hazard, and temperature. In contrast, potential land suitability is quite suitable according to S2, with temperature limits found in Sembiran, Julah, Bondalem, and Tejakula villages.

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Table 1. (Continued)

No.	Homogeneous land units (SLH)	Land Characteristics						
		Retention Hazard (nr)				Nutrients Available		
		CEC (nr1)	Base saturation (nr2)	pH H2O (nr3)	C-Organic (nr4)	N-Total (na1)	P_2O_5 (na2)	K_2O (na3)
		$me100g^{-1}$	%	H_2O	%	%	$mg100g^{-1}$	$mg\ 100g^{-1}$
10	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
1	SLH I/ Pacung	12.25 (l)	88.14 (vh)	6.90 (n)	2.02 (m)	0.03 (vl)	1.44 (vl)	147.91 (m)
2	SLH II/ Sembiran	30.22 (h)	94.82 (vh)	6.90 (n)	2.18 (m)	0.05 (vl)	2.75 (vl)	242.99 (h)
3	SLH III/ Julah	24.021 (h)	93.69 (vh)	6.70 (n)	2.53 (m)	0.07 (vl)	2.70 (vl)	238.12 (h)
4	SLH IV/ Madenan	10.98 (l)	96.30 (vh	7.60 (sa)	1.58 (m)	0.03 (vl)	7.72 (vl)	281.29 (h)
5	SLH V/ Bondalem	37.30 (h)	92.86 (vh)	7.10 (n)	2.60 (m)	0.06 (vl)	3.92 (vl)	268.12 (h)
6	SLH VI/ Tejakula	28.39 (h)	86.82 (vh)	6.70 (n)	2.57 (m)	0.02 (vl)	0.64 (vl)	177.71 (m)
7	SLH VII/ Les	10.83 (l)	98.11 (vh)	6.80 (n)	1.99 (l)	0.03 (vl)	35.01 (m)	355.06 (h)
8	SLH VIII/Penuk-tukan	16.95 (m)	97.56 (vh)	6.80 (n)	3.22 (h)	0.07 (vl)	3.21 (vl)	301.39 (h)
9	SLH IX/Sambi-renteng	10.19 (l)	96.00 (vh)	6.80 (n)	2.78 (m)	0.06 (vl)	7.07 (vl)	318.61 (h)
10	SLH X/ Tembok	14.97 (l)	100.00 (vh)	6.70 (n)	2.43 (m)	0.05 (vl)	6.38 (vl)	377.29 (h)
11	SLH XI/Sembiran	36.25 (h)	98.68 (vh)	7.20 (n)	2.76 (m)	0.07 (vl)	6.56 (vl)	228.34 (h)
12	SLH XII/Tembok	11.18 (l)	98.00 (vh)	6.90 (n)	2.87 (m)	0.07 (vl)	4.56 (vl)	267.21 (h)

Description: SLH (homogeneous land unit); vl = very low; l = low; m = moderate; h = high; vh = very high; sa = slightly alkaline; n = neutral.

Suitability of actual land is not suitable (N) for grapes in Madenan Village, marginal (S3) in Les, Penuktukan, Sambirenteng, and Bawah Villages, with limiting factors of rainfall, texture, N-total, P-available, pH, organic-C, slope, erosion hazard, and temperature. In contrast, potential land suitability is relatively high S2, with the only limit being temperature in the Pacung, Sembiran, Julah, Bondalem, and Tejakula villages (Su et al., 2020; Trigunasih et al., 2017; Yan et al., 2022).

Suitability of actual land is not suitable (N) for avocado plants is in Madenan Village, marginal (S3) is in Sembiran, Les, Penuktukan, Sambirenten, and Bawah Villages, with limiting factors of rainfall, texture, N-total, P-available, pH, organic-C, slope, hazard erosion, and temperature. In contrast, the potential land suitability is quite suitable for S2, with the only limiting factor being temperature in the villages of Pacung, Sembiran, Julah, Bondalem, and Tejakula (Atucha et al., 2013; Farooq et al., 2022; Sidabutar et al., 2023).

Limiting Factors and Improvement Efforts

Based on the results of the analysis of land suitability for mango, mangosteen, kingfruit, raspberry plant, grape, and avocado in the research area, available actual and potential land suitability, limiting factors, and improvements in each homogeneous land unit (SLH) for each commodity evaluated were obtained. The limiting factors for all SLH include rainfall, temperature, texture, pH, N-total, P-

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available, slope, and erosion hazard (Table 2) (Kihoro et al., 2013; Salifu et al., 2022).

Table 1. (Continued)

Land Characteristics								
No.	Homogeneous Land Unit (SLH)/Village	Toxicity	Erosion Hazard (eh)		Flood Hazard (fh)		Preparation Land (IP)	
		Salinity (xc)	Slope (eh1)	Erosion Hazard (eh2)	High Inundation (fh1)	Long Time Inundation (fh2)	Surface Rocks (lp1)	Rock Outcrop (lp2)
		mmhos.cm^{-1}	%		cm	day	%	%
20	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
1	SLH I/ Pacung	0.30 (vl)	0-8	Very light	0	0	< 5	< 5
2	SLH II/ Sembiran	0.19 (vl)	0-8	Very light	0	0	< 5	< 5
3	SLH III/ Julah	0.19 (vl)	15-30	Heavy	0	0	< 5	< 5
4	SLH IV/ Madenan	0.24 (vl)	15-30	Heavy	0	0	< 5	< 5
5	SLH V / Bondalem	0.31 (vl)	8-15	Light-Moderate	0	0	< 5	< 5
6	SLH VI/ Tejakula	0.17 (vl)	0-8	Very light	0	0	< 5	< 5
7	SLH VII/ Les	0.23 (vl)	0-8	Very light	0	0	< 5	< 5
8	SLH VIII/Penuk-tukan	0.20 (vl)	15-30	Heavy	0	0	< 5	< 5
9	SLH IX/Sambi-renteng	0.17 (vl)	8-15	Light-Moderate	0	0	< 5	< 5
10	SLH X/ Tembok	0.14 (vl)	0-8	Very light	0	0	< 5	< 5
11	SLH XI/ Sembiran	0.35 (vl)	8-15	Very light	0	0	< 5	< 5
12	SLH XII/ Tembok	0.18 (vl)	8-15	Light-Moderate	0	0	< 5	< 5

Description: homogeneous land unit(SLH); l = low; vl = very low; vlg = very light; m = moderate; h = heavy.

Table 2. Quality and characteristics of land

No.	Land Characteristics	Data/Size
1.	Temperature	23ºC-28ºC
2.	Rainfall	1500mmyear^{-1}– 2000mmyear^{-1}
3.	Nutrient Retention (CEC)	Moderate–Very high
4.	Organik Matter Content	Very low-High
5.	Soil pH	Slightly acidic-Neutral
6.	Total N Content	Very low–Very high
7.	PAvailable	Very low–Very high
8.	K Available	Very low–Very High
9.	Salinity	Very low
10.	Slope	Plat-Steep
11.	Erosion Hazard	Very light–Very heavy
12.	Flood Hazard/Rock	Not exist

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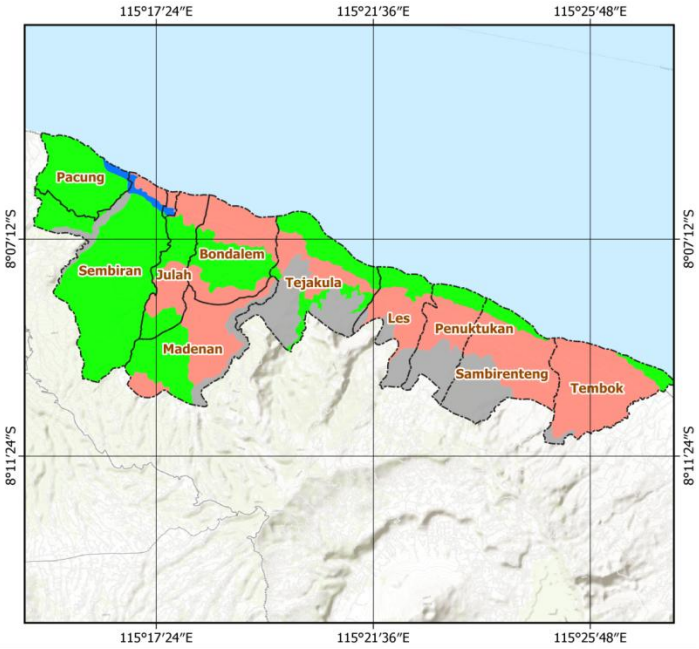
The limiting factors of temperature and texture cannot be improved because they are permanent limiting factors (Ritung et al., 2011; Yuniti et al., 2022). Rainfall is enhanced by improving irrigation and building reservoirs. Base saturation and acidity degree (pH) are improved by adding organic materials. N-total is improved by Urea fertilization. P availability is enhanced by applying SP36 and TSP fertilizer. Slopes are repaired by making terraces (Andrianto & Harimurti, 2021). The erosion hazard is improved by planting parallel to contours and planting land cover. Surface rocks and rock outcrops are improved by land management (Arifianto & Ismail, 2023; Renaldi et al., 2023.

Land Use Directions for Fruit Horticultural Plants

In terms of potential land suitability for fruit horticultural crops, it was found that class N (not suitable) could not be improved by input, so it was recommended to replace these plants with conservation plants or terrace strengthening plants (Lee et al., 2023). Directions for land use for fruit crops are appropriate (S2) with only temperature limiting factors in the Pacung, Sembiran/SLH II, Julah, Bondalem, and Tejakula villages (Figure 1).



Description: green colour develops (mangos, mangosteen, kingfruit, raspberry plant, grape, and avocado)
blue colour develops (mangos, mangosteen, grapes, and avocados)
Red colour does not develop
grey colour, the other develops

Figure 1. Land Use Directions for Fruit Horticulture Plants in Tejakula District

CONCLUSION

The research results regarding land characteristics in Tejakula District, Buleleng Regency, Bali Province, include temperature, rainfall, soil texture, pH, and nutrient content, which become limiting factors. Evaluate land suitability for fruit horticultural crops, such as mango, mangosteen, kingfruit, raspberry plant, grapes, and avocado, and identify factors limiting the growth of fruit crops that can be improved. Improvement steps, such as improving irrigation and adding N and P nutrients, are being considered priorities. Actual and potential land suitability varies, for mango, raspberry plant, and avocado crops, showing high suitability after improvement, but other crops have certain

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restrictions. Land use directions include allocations for various crops developed in the Pacung, Sembiran, Julah, Bondalem, and Tejakula, which are suitable village areas. Mangosteen is suitable for Madenan because of its high levels and lower temperatures. Land use planning is done by improving irrigation, applying organic fertilizer, Urea, and Phonska, and making terracing.

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