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**Karakterisasi Lingkungan dan Alternatif Silvikultur untuk Pengembangan Kakao (Theobroma cacao L.)
pada Sistem Agroforestri di Kalurahan Terong, Kapanewon Dlingo, Kabupaten Bantul**
Raihan Zia Ulhaq, Prof. Priyono Suryanto, S.Hut., M.P., Ph.D.; Ir. Aqmal Nur Jihad, S.Hut., M.Sc.
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KARAKTERISASI LINGKUNGAN DAN ALTERNATIF SILVIKULTUR UNTUK PENGEMBANGAN KAKAO (Theobroma cacao L.) PADA SISTEM AGROFORESTRI DI KALURAHAN TERONG, KAPANEWON DLINGO, KABUPATEN BANTUL

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INTISARI

Tanaman kakao (*Theobroma cacao L.*) banyak dikembangkan dalam sistem agroforestri, namun penanamannya sering belum mempertimbangkan kesesuaian lahan secara spesifik. Penelitian ini bertujuan untuk menganalisis kondisi lingkungan dan mengidentifikasi faktor pembatas utama pertumbuhan kakao, serta merumuskan alternatif silvikultur untuk pengembangan kakao pada sistem agroforestri di Kalurahan Terong, Kapanewon Dlingo, Kabupaten Bantul.

Penelitian dilaksanakan menggunakan metode survei lapangan dengan pendekatan deskriptif kuantitatif pada sembilan plot berukuran 20 m × 20 m yang dikelompokkan berdasarkan tiga kategori intensitas cahaya (rendah, sedang, tinggi). Parameter lingkungan yang diamati meliputi curah hujan, suhu, kelembapan, ketinggian tempat, kemiringan lereng, pH tanah, drainase, dan intensitas naungan. Penentuan kelas kesesuaian lahan dilakukan dengan metode *matching* berdasarkan kerangka Food and Agriculture Organization (FAO), dipadukan dengan analisis faktor pembatas (*limiting factor*), komposisi vegetasi melalui Indeks Nilai Penting (INP), keanekaragaman jenis melalui Indeks Shannon-Wiener, serta uji korelasi Spearman antar parameter iklim mikro.

Hasil penelitian menunjukkan tidak terdapat plot yang termasuk kelas sangat sesuai (S1) maupun cukup sesuai (S2); lima plot termasuk kelas sesuai marginal (S3) dan empat plot termasuk kelas tidak sesuai (N). Faktor pembatas utama adalah kemiringan lereng, diikuti intensitas naungan dan suhu. Sonokeling (*Dalbergia latifolia*) mendominasi tingkat tiang dan pancang, sedangkan mahoni (*Swietenia macrophylla*) mendominasi tingkat pohon, dengan keanekaragaman jenis berkategori rendah hingga sedang. Alternatif silvikultur yang direkomendasikan meliputi penambahan pohon penaung pada plot bernaungan rendah, penjarangan bertahap pada plot bernaungan tinggi, pemberian mulsa organik untuk mengatasi suhu tinggi, serta penerapan konservasi tanah dan air (terasering, rorak, penanaman searah kontur) untuk meminimalkan dampak kemiringan lereng terhadap pengembangan kakao yang berkelanjutan.

Kata Kunci: kesesuaian lahan, faktor pembatas, intensitas naungan, silvikultur, agroforestri

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ENVIRONMENTAL CHARACTERIZATION AND SILVICULTURAL ALTERNATIVES FOR COCOA (Theobroma cacao L.) DEVELOPMENT IN AGROFORESTRY SYSTEM IN TERONG VILLAGE, DLINGO SUBDISTRICT, BANTUL REGENCY

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ABSTRACT

Cocoa (*Theobroma cacao L.*) has been widely developed within agroforestry systems, yet its cultivation often does not adequately consider site-specific land suitability, particularly variations in microenvironmental conditions at the plot scale, such as light intensity, temperature, and humidity. This study aims to analyze environmental conditions and identify the main limiting factors affecting cocoa growth, as well as to formulate silvicultural alternatives for cocoa development within an agroforestry system in Terong Village, Dlingo Subdistrict, Bantul Regency.

This study employed a field survey method with a quantitative descriptive approach across nine 20 m x 20 m plots, grouped into three light-intensity categories (low, moderate, and high). The environmental parameters observed included rainfall, temperature, humidity, elevation, slope, soil pH, drainage, and shade intensity. Land suitability classes were determined using the matching method based on the Food and Agriculture Organization (FAO) framework, combined with limiting-factor analysis, vegetation composition through the Importance Value Index (IVI), species diversity through the Shannon-Wiener Index, and Spearman correlation tests among microclimatic parameters.

The results showed that no plot fell into the highly suitable (S1) or moderately suitable (S2) class; five plots were classified as marginally suitable (S3) and four plots as unsuitable (N). The main limiting factor was slope gradient, followed by shade intensity and temperature. Sonokeling (Dalbergia latifolia) dominated the pole and sapling growth stages, while mahogany (*Swietenia macrophylla*) dominated the tree stage, with species diversity ranging from low to moderate (H' 0.58-2.30). Recommended silvicultural alternatives include adding shade trees in under-shaded plots, gradual thinning of shade trees in over-shaded plots, applying organic mulch to mitigate high temperatures, and implementing soil and water conservation measures (terracing, infiltration trenches, and contour planting) to minimize the impact of slope gradient on sustainable cocoa development.

Keywords: *land suitability, limiting factors, shade intensity, silviculture, agroforestry*

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