

**DIVERSITY AND PHENETIC RELATIONSHIPS OF COCOA CLONE
(*Theobroma cacao* L.) IN KULON PROGO REGENCY BASED ON
MORPHOLOGICAL CHARACTERISTICS**

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ABSTRACT

*Cocoa (*Theobroma cacao* L.) is a prominent commodity in Indonesia, including in Kulon Progo Regency. Cocoa belongs to the Malvaceae family and inhabits a topical climate. Information on the diversity of cocoa clones in Kulon Progo is still quite limited. This research aims to document and analyze the phenetic relationship of cocoa clones cultivated in two plantations in Kulon Progo based on morphological characters. The research was conducted with an exploratory study in Kalibawang and Samigaluh sub-districts for data collection of leaf, flower, seed, and fruit organs. A total of 27 morphological characters were observed, including qualitative and quantitative characters. Characterization results were analyzed using MVSP version 3.1 with UPGMA clustering method and Gower coefficient. Thirteen cultivated cocoa clones were found, namely Sulawesi 01, Sulawesi 02, ICCRI 03, ICCRI 04, ICCRI 07, RCC 70, RCC 71, KKM, M01, MCC 02, TSH 858, ICS 60, and Hibrida. The thirteen clones showed morphological variation in leaf, flower, fruit and seed characters, as well as the highest variation in fruit morphological characters. Clustering analysis showed 3 groups formed. Clones ICCRI 03 and RCC 70 are most closely related, while clone ICS 60 is most distantly related. The limitation of this research is that it has not been able to answer the suitability of kinship relationships based on the origin of parental clones due to the unavailability of published studies on cocoa clone development. This research is beneficial to enrich the literature and provide scientific data for the basis of further research on cocoa clones in Kulon Progo.*

Keywords: Cocoa clones, gower coefficient, phenetic kinship, morphological diversity, plant systematic

KEANEKARAGAMAN DAN HUBUNGAN KEKERABATAN FENETIK KLON KAKAO (*Theobroma cacao* L.) DI KABUPATEN KULON PROGO BERDASARKAN KARAKTER MORFOLOGIS

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INTISARI

Kakao (*Theobroma cacao* L.) merupakan komoditas unggulan di Indonesia, termasuk di Kabupaten Kulon Progo. Kakao tergolong ke dalam famili Malvaceae dan berhabitat di iklim tropis. Informasi mengenai keragaman klon kakao di Kulon Progo masih terbatas. Penelitian ini bertujuan untuk mendokumentasikan dan menganalisis kekerabatan fenetik klon kakao yang dibudidayakan di dua Perkebunan di Kulon Progo berdasarkan karakter morfologisnya. Penelitian dilakukan dengan studi eksplorasi di Kecamatan Kalibawang dan Samigaluh untuk koleksi data organ daun, bunga, biji, dan buah. Sebanyak 27 karakter morfologi diamati, meliputi karakter kualitatif dan kuantitatif. Hasil karakterisasi dianalisis menggunakan perangkat MVSP versi 3.1 dengan metode klustering UPGMA dan koefisien Gower. Ditemukan 13 klon kakao yang dibudidayakan, yaitu Sulawesi 01, Sulawesi 02, ICCRI 03, ICCRI 04, ICCRI 07, RCC 70, RCC 71, KKM, M01, MCC 02, TSH 858, ICS 60, dan Hibrida. Ketiga belas klon tersebut menunjukkan variasi morfologis pada karakter daun, bunga, buah dan biji, serta variasi tertinggi pada karakter morfologis buah. Analisis klustering menunjukkan 3 kelompok yang terbentuk. Klon ICCRI 03 dan RCC 70 berkerabat paling dekat, sedangkan klon ICS 60 berkerabat paling jauh. Keterbatasan dalam penelitian ini belum dapat menjawab kesesuaian hubungan kekerabatan berdasarkan asal-usul klon parental karena kurang tersedianya studi publikasi mengenai pengembangan klon kakao. Penelitian ini bermanfaat untuk memperkaya literatur dan menyediakan data ilmiah untuk dasar penelitian lanjutan klon kakao di Kulon Progo.

Kata kunci: Keragaman morfologis, kekerabatan fenetik, koefisien gower, klon kakao, sistematika tumbuhan