Abstrak

Penelitian bertujuan untuk 1) mengetahui hubungan antara tingkat ketersediaan Mg dalam tanah dengan kejadian layu pentil, laju pertumbuhan buah, dan produktivitas tanaman kakao klon RCC70, RCC71, dan KKM22, dan 2) menentukan klon kakao yang tanggap terhadap tingkat ketersediaan Mg dalam tanah mendasarkan pada indikator tingkat kejadian layu pentil, laju pertumbuhan buah, dan produktivitas. Penelitian dilakukan di Kebun Kakao Unit Produksi Segayung Utara, PT Pagilaran, Batang, Jawa Tengah. Percobaan lapangan disusun menggunakan Rancangan Lingkungan Tersarang (*Nested Design*). Tingkat ketersediaan Mg dalam tanah, yaitu Mg 57,4 ppm dan Mg 50,0 ppm, bertindak sebagai sarang. Sedangkan klon kakao, yaitu RCC 70, RCC 71, dan KKM 22, tersarang pada faktor tingkat ketersediaan Mg dalam tanah. Variabel yang diamati meliputi karakter iklim mikro, aktivitas fisiologis dan biokimia tanaman kakao, tingkat kejadian layu pentil, pertumbuhan buah, dan hasil tanaman kakao. Data yang diperoleh selanjutnya dianalisis varian (ANOVA) dengan tingkat kepercayaan 95%, dilanjutkan dengan uji beda nyata terkecil (BNT) jika hasil ANOVA menunjukkan perbedaan yang nyata antar perlakuan. Hasil penelitian memberikan informasi bahwa ketersediaan Mg dalam tanah yang lebih tinggi (57,4 ppm) mampu meningkatkan konsentrasi Mg dalam jaringan, memperbaiki aktivitas fisiologis tanaman (kenaikan kadar klorofil a, b, total, bukaan stomata lebih lebar, kenaikan laju fotosintesis, dan kenaikan kadar sukrosa dalam pentil). Hal tersebut berlaku sama pada RCC 70, RCC 71, maupun KKM 22.

Kata kunci: kakao, magnesium, fisiologi, layu pentil, hasil

Abstract

The research objectives were 1) to determine the relationships between the levels of magnesium (Mg) availability in the soil with the incidence of Cherelle wilt, the rate of cocoa pod growth, and the productivities of three cocoa clones (RCC70, RCC71, and KKM22), and 2) to determine the cocoa clones that were responsive to the levels of Mg availabilities in the soil based on some indicators, namely the incidence of Cherelle wilt, fruit growth rate, and productivity. The field research was conducted in the Cocoa Plantation, Production Unit of Segayung Utara, Pagilaran Company, Batang, Central Java. The field experiment was arranged in a Nested Design, with three blocks as replications. The levels of Mg availability in the soil, namely Mg 57,4 ppm and Mg 50,0 ppm, acts as the nest. Whereas cocoa clones, namely RCC 70, RCC 71, and KKM 22, were nested in the levels Mg availability in the soil. Observations were done on several variables of micro-climate, physiological and biochemical activities of cocoa, the incidence rate of Cherelle wilt, fruit growth, and yields. Data were analyzed using analysis of variance (ANOVA) at 5% levels and continued with least significant difference (LSD) if the ANOVA results showed significant differences among treatments. The results showed that higher Mg availability in the soil (57,4 ppm) was able to increase the concentrations of Mg in the plant tissue, improve plant physiological activities (increase in chlorophyll a, b, and total, wider stomatal opening, increase in photosynthetic rate, and increase sucrose levels in Cherelle). This applies equally to all of the cocoa clones, namely RCC 70, RCC 71, and KKM 22.

Keywords: cocoa, magnesium, physiology, Cherelle wilt, yields