

Intisari

Tajuk tanaman berperan penting dalam siklus hidrologi secara langsung maupun tidak langsung, berkaitan dengan konservasi tanah dan air melalui model arsitektur pohon. Studi tentang interaksi antara tutupan tajuk tanaman dengan proses hidrologis permukaan dikaitkan kondisi fisik tanah pada skala individu tanaman belum banyak dilakukan. Oleh karena itu, penelitian ini dilakukan dengan tujuan mengkaji hubungan tanaman kelapa dan mahoni dengan mekanisme intersepsi dan karakteristik tanah di bawahnya guna memperoleh informasi komposisi tanaman yang tepat untuk konservasi.

Penelitian dilakukan dengan mengumpulkan data curah hujan serta mengukur aliran batang (*stemflow*), lolosan tajuk (*throughfall*), intersepsi, dan infiltrasi. Dilakukan pula analisis sifat fisik dan kimia tanah meliputi tekstur, BV, BJ, porositas, pori makro, kelembaban awal, dan bahan organik di bawah tanaman kelapa, mahoni, dan lahan terbuka. Pengambilan sampel tanaman ditentukan dengan menggunakan metode *purposive sampling* berdasarkan keseragaman ukuran dan penentuan sampel tanah dengan metode *purposive sampling* berdasarkan luas proyeksi tajuk. Data penelitian dianalisis menggunakan metode evaluasi hasil dan analisis data laboratorium. Analisis regresi digunakan untuk menganalisis hubungan keeratan pada parameter yang dikaji.

Hasil penelitian menunjukkan terdapat perbedaan karakteristik hidrologis yang tegas pada lingkungan di bawah tanaman kelapa dan mahoni sebagai akibat dari perbedaan fisiologis tanaman dan karakteristik tanah. Mekanisme intersepsi pada kedua tanaman mampu mengurangi daya rusak air hujan terhadap agregat tanah. Air hujan yang sampai pada permukaan tanah setelah melewati mekanisme intersepsi kemudian mengisi kapasitas infiltrasi. Kapasitas infiltrasi banyak dipengaruhi oleh karakteristik fisik tanah. Karakteristik tanah di bawah tanaman kelapa dan mahoni bervariasi berkaitan dengan sistem perakaran masing-masing tanaman. Sistem perakaran tanaman kelapa berpengaruh sangat baik terhadap kapasitas infiltrasi di bawahnya, didukung dengan fisiologis tanaman kelapa yang banyak menyerap air menyebabkan tanaman ini mampu menekan aliran permukaan lebih baik dibanding tanaman mahoni.

Kata kunci: kapasitas infiltrasi, sifat fisik tanah, *stemflow*, *throughfall*,

Abstract

Tree canopies play an important role in the hydrological cycle, directly or indirectly, in accordance with soil and water conservation through tree architecture models. Studies on the interaction between vegetation cover and surface hydrological processes and soil physical conditions at the individual plant scale have not been widely carried out. Therefore, this research was conducted with the aim of examining the relationship between vegetation and interception mechanism and the soil characteristics under *Cocos nucifera* L. and *Swietenia mahagoni* L. to obtain information on the appropriate vegetation composition for conservation.

The research was conducted by collecting rainfall data and measuring *stemflow*, *interception*, *throughfall*, and infiltration. Other observations that support the data were also measured i.e soil texture, *bulk density*, *particle density*, soil porosity, soil macro pores, initial soil moisture, and soil organic matter under *Cocos nucifera* L, *Swietenia mahagoni* L., and barren land. Sampling of trees was determined by using *purposive sampling* based on size similarity and determination of soil samples by *purposive sampling method* based on canopy area. The research data was analyzed using the results evaluation method and laboratory data analysis. Regression analysis was used to analyze the close relationship between the parameters studied.

The results show that there are significant differences in hydrological characteristics in the environment under *Cocos nucifera* L and *Swietenia mahagoni* L. as a result of plant physiological differences and soil characteristics. The interception mechanism of both vegetation was able to reduce the damage of rainwater on soil aggregates. Rainwater that reaches the ground surface after passing through the interception mechanism, then fills the infiltration capacity. Infiltration capacity is much influenced by the physical characteristics of the soil. Soil characteristics under coconut and mahogany depend on the root system of each vegetation. The root system of coconut has an excellent effect on the infiltration capacity below and with the support of the physiological coconut plants that absorb a lot of water, this vegetation could reduce surface runoff better than mahogany.

Keywords: *stemflow*, *throughfall*, infiltration capacity, soil physical properties