

RINGKASAN

Tanaman aren (*Arenga pinnata* (Wurmb.) Merr.) adalah tanaman serbaguna yang sejak lama telah dikenal menghasilkan bahan-bahan industri. Hampir semua bagian tanaman aren dapat dimanfaatkan dan memiliki nilai ekonomi. Tanaman aren dapat tumbuh baik pada ketinggian 500-800 m dpl, bahkan masih dapat dijumpai pada ketinggian 1.400 m dpl. Mayoritas tanaman aren di Desa Sunyalangu hanya dimanfaatkan niranya saja oleh masyarakat, itu pun produksi yang dihasilkan tidak stabil. Penelitian ini bertujuan untuk mengetahui pengaruh faktor ketinggian tempat, perlakuan pembenah tanah organik (POC dan asam humat) serta interaksinya terhadap morfologi, fisiologi, produksi dan kualitas nira tanaman aren. Pada penelitian ini, ketinggian tempat dan perlakuan pembenah tanah organik (POC dan asam humat) diharapkan dapat memberikan pengaruh nyata terhadap morfologi, fisiologi, produksi dan kualitas nira tanaman aren di Desa Sunyalangu.

Penelitian dilaksanakan mulai September 2022 hingga Februari 2023 di areal tempat tumbuhnya tanaman aren yang meliputi daerah aliran sungai dan perbukitan di Dusun Semaya, Desa Sunyalangu, Kecamatan Karanglewas, Kabupaten Banyumas pada ketinggian 400 – 700 m dpl dan analisis tanaman dan nira dilakukan di Laboratorium Agronomi dan Hortikultura, Laboratorium Tanah dan Sumberdaya Lahan Fakultas Pertanian Universitas Jenderal Soedirman serta Laboratorium Chem-Mix Pratama, Bantul, Yogyakarta. Rancangan yang digunakan yaitu Rancangan *Split Plot Design* dengan dua faktor. Faktor pertama adalah berbagai ketinggian tempat yang terdiri atas ≤ 500 m dpl (T_1), $500 < x \leq 650$ m dpl (T_2) dan > 650 m dpl (T_3). Faktor kedua adalah pemberian pembenah tanah organik yang terdiri atas kontrol (P_0), POC SO kontan konsentrasi 15 ml/l (P_1) dan asam humat konsentrasi 15 ml/l (P_2). Faktor-faktor tersebut dikombinasikan dan didapatkan 27 sampel tanaman aren dengan 9 perlakuan dan 3 kali ulangan.

Variabel yang diamati berupa karakter morfologi, fisiologi, hasil dan kualitas tanaman aren. Variabel morfologi meliputi tinggi dan diameter batang (m), jumlah pelepah (helai), panjang sumbu daun/*rachis* (m), jumlah tandan jantan dan jumlah tandan betina (buah) dan panjang rangkaian mayang betina (m). Variabel fisiologi meliputi kandungan klorofil total (mg/g), aktivitas nitrat reduktasi (ANR), serapan N dan K (g/tanaman). Variabel hasil dan kualitas meliputi produksi volume nira per hari (liter), kadar gula nira (%), kandungan pH nira, kadar gula sukrosa dan reduksi (%). Data hasil pengamatan dianalisis dengan sidik ragam dan dilanjutkan *Duncan's Multiple Range Test* (DMRT) taraf beda nyata 5%. Hasil penelitian menunjukkan bahwa faktor ketinggian tempat memberikan pengaruh nyata terhadap tinggi batang, panjang sumbu daun/*rachis*, jumlah tandan jantan dan jumlah tandan betina, kandungan klorofil total, serapan N, kadar gula dan kandungan pH nira. Perlakuan pembenah tanah organik memberikan pengaruh nyata terhadap kandungan klorofil total, aktivitas nitrat reduktasi, serapan N dan K serta produksi volume nira per hari.

SUMMARY

Sugar palm (Arenga pinnata (Wurmb.) Merr.) is a multipurpose plant which has long been known to produce industrial materials. Almost all parts of the palm plant can be utilized and have economic value. Sugar palm plants can grow well at an altitude of 500-800 m above sea level, and can even be found at an altitude of 1,400 m above sea level. The majority of sugar palm plants in Sunyalangu Village are only used for the sap by the community, and even then the resulting production is not stable. This study aims to determine the effect of altitude, treatment of organic soil enhancers (POC and humic acid) and their interactions on the morphology, physiology, production and quality of sugar palm sap. In this study, it is hoped that the altitude and treatment of organic soil amendments (POC and humic acid) will have a significant effect on the morphology, physiology, production and quality of palm sap in Sunyalangu Village.

The research was carried out from September 2022 to February 2023 in areas where sugar palm plants grow which include watersheds and hills in Semaya Hamlet, Sunyalangu Village, Karanglewas District, Banyumas Regency at an altitude of 400 – 700 m above sea level and analysis of plants and sap was carried out at the Agronomy Laboratory and Horticulture, Soil and Land Resources Laboratory, Faculty of Agriculture, Jenderal Soedirman University and Chem-Mix Pratama Laboratory, Bantul, Yogyakarta. The design used is a Split Plot Design with two factors. The first factor is the various altitudes consisting of ≤ 500 m asl (T1), $500 < x \leq 650$ m asl (T2) and > 650 m asl (T3). The second factor was the provision of organic soil enhancer consisting of control (P0), POC SO solid concentration of 15 ml/l (P1) and humic acid concentration of 15 ml/l (P2). These factors were combined and obtained 27 samples of palm plants with 9 treatments and 3 replications.

The variables observed were morphological, physiological, yield and quality of sugar palm plants. Morphological variables included stem height and diameter (m), number of fronds (strands), length of leaf axis/rachis (m), number of male and female bunches (fruit) and length of female mayang series (m). Physiological variables include total chlorophyll content (mg/g), nitrate reductase activity (ANR), N and K uptake (g/plant). Yield and quality variables include volume of sap production per day (liter), sap sugar content (%), sap pH content, sucrose and reduction sugar content (%). Observational data were analyzed by means of variance and continued with Duncan's Multiple Range Test (DMRT) with a significant difference level of 5%. The results showed that the altitude factor had a significant effect on stem height, rachis length, number of male and female bunches, total chlorophyll content, N uptake, sugar content and sap pH content. The treatment of organic soil enhancers had a significant effect on total chlorophyll content, nitrate reductant activity, N and K uptake and volume production of sap per day.