RINGKASAN

Tanaman aren merupakan satu dari beberapa jenis tanaman perkebunan yang memiliki nilai ekonomis tinggi dan berpotensi untuk dikembangkan. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian biochar dan pupuk NPK dengan dosis berbeda terhadap fisiologi dan pertumbuhan bibit tanaman aren, dan mengetahui pengaruh interaksi dari kombinasi biochar dan pupuk NPK. Penelitian dilakukan di rumah plastik (*screenhouse*) lahan *Experimental-Farm* Fakultas Pertanian Universitas Jenderal Soedirman, Kabupaten Banyumas dengan ketinggian tempat 113 mdpl. Penelitian dilaksanakan mulai bulan Juli 2023 sampai April 2024. Metode yang digunakan pada penelitian ini adalah Rancangan *Split Plot* dua faktorial dengan 3 ulangan. Faktor yang menjadi *main plot* yaitu biochar dan faktor yang menjadi *sub plot* yaitu pupuk NPK. Perlakuan dosis biochar (*Main plot*) dibagi menjadi 3 taraf diantaranya yaitu B0 (tanpa perlakuan biochar), B_1 (200 g biochar/polybag), dan B2 (400 g/ polybag). Perlakuan dosis NPK (*Sub plot*) dibagi menjadi 3 taraf diantaranya P_0 = tanpa perlakuan pupuk NPK, P_1 = 31,25 g pupuk NPK/polybag, dan P_2 = 62,5 g pupuk NPK/polybag. Variabel yang diamati yaitu tinggi tanaman, diameter batang, jumlah daun, luas daun, indeks luas daun (ILD), kehijauan daun, laju transpirasi, lebar bukaan stomata, kerapatan stomata, volume akar tanaman aren. Data penelitian dianalisis menggunakan uji F (ANOVA) pada taraf kesalahan 5%. Jika hasil menunjukkan adanya pengaruh nyata, maka dilanjutkan dengan uji *Least Significant Difference* (LSD) untuk membandingkan pengaruh antar perlakuan. Hasil penelitian menunjukkan bahwa: 1) Pemberian biochar berpengaruh nyata terhadap variabel kehijauan daun dan volume akar, 2) Pemberian pupuk NPK berpengaruh nyata terhadap variabel tinggi tanaman, luas daun, lebar bukaan stomata, dan kerapatan stomata, 3) Terdapat interaksi antara biochar dan pupuk NPK yang berpengaruh nyata terhadap variabel tinggi tanaman, 4) Tidak terdapat pengaruh nyata pemberian biochar dan pupuk NPK terhadap variabel diameter batang, jumlah daun, indeks luas daun dan laju transpirasi.

Kata kunci : Aren, Biochar, pupuk NPK

SUMMARY

Sugar palm plants are one of plantation crops that have high economic value and have the potential to be developed. This research was conducted to determine the effect of different doses of biochar and NPK fertilizer on the physiology and growth of sugar palm seedlings, and to determine the interaction effect of the combination of biochar and NPK fertilizer. The research was carried out in a plastic house (screenhouse) at the Experimental-Farm area of the Faculty of Agriculture, Jenderal Soedirman University, Banyumas Regency with an altitude of 113 meters above sea level. The research started from July 2023 to April 2024. The method used in this research was a two-factorial Split Plot Design with 3 replications. The biochar dose treatment (main plot) was divided into 3 levels, namely B0 = without biochar treatment), B1 = 200 g biochar/polybag), and B2 = 400 g/polybag. The NPK dose treatment (Sub plot) was divided into 3 levels, including P0= no NPK fertilizer treatment, P1= 31.25 g of NPK fertilizer/polybag, and P2= 62.5 g of NPK fertilizer/polybag. The variables observed were plant height, stem diameter, number of leaves, leaf area, leaf area index (LAI), leaf greenness, transpiration rate, stomatal opening width, stomata density, root volume of sugar palm plants. Observational data were analyzed by means of variance and continued with Least Siginficance Different (LSD) with a significant difference level of 5%. The results of the research show that: 1) biochar factor has a significant effect on the variables of leaf greenness and root volume, 2) NPK fertilizer factor has a significant effect on the variables of plant height, leaf area, stomatal opening width and stomata density, 3) There is an interaction between biochar and NPK fertilizer that has significant effect on plant height variables, 4) There is no real effect of giving biochar and NPK fertilizer on the variables of stem diameter, number of leaves, leaf area index and transpiration rate.

Keywords : Sugar palm, Biochar, NPK fertilizer