

RINGKASAN

Melon (*Cucumis melo* L.) adalah tanaman hortikultura bernilai ekonomi tinggi. Sistem budidaya melon terus berkembang sebagai upaya meningkatkan produktivitas dan mengatasi kelemahan sistem konvensional. Meskipun sistem budidaya hidroponik berdaya hasil tinggi, namun besarnya investasi menjadikannya masalah tersendiri. Budidaya dalam *polybag* dapat menjadi alternatif dalam produksi melon. Komposisi dan input yang tepat diperlukan untuk mencapai sistem budidaya yang efisien. Penelitian ini bertujuan mengkaji pengaruh kombinasi media tanam dan pupuk hayati terhadap pertumbuhan dan hasil melon, serta menentukan dosis optimal bagi budidaya berkelanjutan.

Penelitian ini dilaksanakan pada Oktober 2024 hingga Februari 2025 di *Screenhouse* BBP Dinas Pertanian Provinsi Jawa Tengah di Bojongsari, Laboratorium Agroekologi, Laboratorium Riset Unsoed dan Laboratorium Ilmu Tanah Fakultas Pertanian Unsoed. Bahan yang digunakan pada penelitian kali ini antara lain tanah Inceptisol, kompos kohe kambing, arang sekam, pupuk NPK, pupuk hayati, dan benih melon varietas *sweet net*, sedangkan alat yang digunakan meliputi peralatan tanam dan peralatan laboratorium. Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) faktorial yang terdiri dari dua faktor, yaitu faktor media tanam (M1: tanah (70%), kompos kohe kambing (10%), arang sekam (20%), M2: tanah (60%), kompos kohe kambing (20%), arang sekam (20%), M3: tanah (40%), kompos kohe kambing (40%), arang sekam (20%)) dan faktor konsentrasi pupuk hayati (P1: 0 mL/L (Kontrol), P2: 10 mL/L (250 ml/tanaman saat sudah diencerkan), P3: 20 mL/L (250 ml/tanaman saat sudah diencerkan)), terdapat 9 kombinasi perlakuan, masing-masing diulang 3 kali, sehingga total terdapat 81 unit percobaan. Variabel yang diamati meliputi indeks luas daun (ILD), laju pertumbuhan tanaman (LPT), kandungan klorofil, waktu muncul bunga, diameter dan berat buah, indeks panen (IP), serta kadar kemanisan buah ($^{\circ}\text{brix}$). Data yang diperoleh dianalisis dengan ANOVA pada taraf 5% dan dilanjutkan dengan uji DMRT jika terdapat perbedaan nyata.

Hasil penelitian menunjukkan bahwa pupuk hayati meningkatkan Laju Pertumbuhan Tanaman (LPT). Hasil penelitian menunjukkan bahwa pupuk hayati meningkatkan Laju Pertumbuhan Tanaman. Pada dosis 20 mL/L pupuk hayati, LPT mencapai 8,42 g/m²/hari. Peningkatan persentase pupuk dalam media tanam berpengaruh meningkatkan kadar kemanisan buah melon, kemanisan terbaik dicapai pada komposisi media 40% kompos kohe kambing mencapai 13,44 $^{\circ}\text{Brix}$. Tidak ditemukan interaksi antara media tanam dan pupuk hayati terhadap variabel yang diamati.

SUMMARY

Melon (Cucumis melo L.) is a horticultural crop of high economic value. Melon cultivation systems continue to develop in efforts to increase productivity and overcome the limitations of conventional systems. Although hydroponic cultivation offers high yields, the high investment costs remain a major constraint. Cultivation in polybags can serve as an alternative for melon production. Appropriate composition and inputs are required to achieve an efficient cultivation system. This study aimed to examine the effects of combining growing media and biofertilizers on the growth and yield of melon, as well as to determine the optimal dosage for sustainable cultivation.

The research was conducted from October 2024 to February 2025 at the Screenhouse of the BBP, Central Java Provincial Department of Agriculture in Bojongsari, the Agroecology Laboratory, the Research Laboratory of Universitas Jenderal Soedirman, and the Soil Science Laboratory, Faculty of Agriculture, Universitas Jenderal Soedirman. The materials used included Inceptisol soil, goat manure, rice husk charcoal, NPK fertilizer, biofertilizer, and melon seeds of the sweet net variety. The tools used comprised planting equipment and laboratory instruments. The experiment employed a factorial Randomized Complete Block Design (RCBD) consisting of two factors: growing media composition (M1: soil 70%, goat manure 10%, rice husk charcoal 20%; M2: soil 60%, goat manure 20%, rice husk charcoal 20%; M3: soil 40%, goat manure 40%, rice husk charcoal 20%) and biofertilizer concentration (P1: 0 mL/L [control], P2: 10 mL/L [250 mL/plant after dilution], P3: 20 mL/L [250 mL/plant after dilution]). There were nine treatment combinations, each replicated three times, resulting in a total of 81 experimental units. Observed variables included leaf area index (LAI), crop growth rate (CGR), chlorophyll content, flowering time, fruit diameter, fruit weight, harvest index (HI), and fruit sweetness level (°Brix). Data were analyzed using ANOVA at a 5% significance level, followed by the DMRT test when significant differences were detected.

The results showed that biofertilizer application increased CGR, with the highest value of 8.42 g/m²/day achieved at a concentration of 20 mL/L. Increasing the proportion of manure in the growing medium enhanced melon fruit sweetness, with the highest sweetness (13.44 °Brix) obtained at a composition of 40% goat manure. No interaction was observed between growing media composition and biofertilizer concentration for the measured variables.