

RINGKASAN

Saat ini permintaan komoditas sayuran berbasis pertanian organik yang terbebas dari residu bahan kimia sintetik makin meningkat, termasuk pada komoditas pakcoy. Hal ini seiring dengan meningkatnya kesadaran masyarakat akan pentingnya menjaga kesehatan. Di sisi lain, petani konvensional di Indonesia akhir-akhir ini terkendala akibat cuaca ekstrem efek pemanasan global, suhu yang sangat tinggi dan adanya anomali curah hujan yang sulit diprediksi. Budidaya tanaman di dalam ruang menggunakan pencahayaan lampu dan penggunaan pupuk organik cair diharapkan mampu mengatasi kedua permasalahan ini. Penelitian ini bertujuan untuk: 1) mengetahui pengaruh jenis lampu terhadap pertumbuhan dan hasil tanaman pakcoy; 2) mengetahui pengaruh konsentrasi formula pupuk organik cair berbasis azolla terhadap pertumbuhan dan hasil tanaman pakcoy; dan 3) mengetahui pengaruh interaksi jenis lampu dan pemberian konsentrasi formula pupuk organik cair berbasis azolla terhadap pertumbuhan dan hasil tanaman pakcoy.

Penelitian telah dilakukan di ruang tumbuh (*chamber room*), kelurahan Kradenan, Sumpiuh, Banyumas dan Laboratorium Agronomi dan Hortikultura Fakultas Pertanian UNSOED Purwokerto dari bulan Maret 2019 sampai Mei 2019. Penelitian menggunakan Rancangan petak terbagi, dua faktor dengan tiga ulangan. Anak petak yaitu konsentrasi formula POC berbasis azolla, yang meliputi kontrol (AB mix EC 2,0), POC 10%, dan POC 15%. Petak utama yaitu jenis lampu yang meliputi LED biru 36 watt, LED merah 36 watt dan neon 42 watt. Data yang diperoleh dianalisis menggunakan analisis sidik ragam pada taraf kesalahan 5%, selanjutnya apabila berpengaruh nyata dilanjutkan dengan uji *Duncan's Multiple Range Test* (DMRT) pada taraf kesalahan 5%.

Hasil penelitian menunjukkan bahwa jenis lampu mempengaruhi tinggi tanaman, bobot tajuk segar dan bobot total tanaman segar, serta tidak mempengaruhi jumlah daun, luas daun, kadar kehijauan daun, panjang akar, bobot akar segar, bobot akar kering, dan bobot tanaman kering. Jenis lampu LED biru 36 watt merupakan jenis lampu yang memberikan pengaruh terbaik pada sebagian besar variabel pengamatan. Konsentrasi formula POC tidak berbeda pengaruhnya dengan AB mix (kontrol) terhadap semua variabel pengamatan. Tidak ada pengaruh interaksi antara jenis lampu dan konsentrasi formula POC terhadap semua variabel pengamatan. LED biru 36 watt dengan konsentrasi formula POC 10% merupakan perlakuan terbaik pada penelitian ini.

SUMMARY

Nowadays, the market demand of vegetable commodities based on organic agriculture which is free from residues of synthetic chemicals is increasing, including on pakcoy commodities. This is in line with increasing public awareness of the importance of maintaining health. On the other hand, conventional farmers in Indonesia lately constrained due to extreme weather effects of global warming, very high temperatures and the existence of unpredictable rainfall anomalies. Plant cultivation in space using lamp lighting and the use of liquid organic fertilizer are expected to be able to overcome these two problems. This research aimed were to: 1) know the effect of the type of lamp on the growth and yield of pakcoy plants; 2) know the effect of concentration of azolla-based liquid organic fertilizer on the growth and yield of pakcoy plants; and 3) determine the optimal combination of lamp types and the concentration of azolla-based liquid organic fertilizer on the growth and yield of pakcoy plants.

Research was carried out at chamber room, Kradenan village, Sumpiuh, Banyumas and Agronomy and Horticulture Laboratories at the UNSOED Purwokerto Agricultural Faculty in March 2019 until May 2019. This research used split plot design, two factor and three replications. The subplots was concentrations of azolla-based liquid organic fertilizer, which include controls (AB mix EC 2.0), concentration of azolla-based liquid organic fertilizer 10%, and concentration of azolla-based liquid organic fertilizer 15%. The main plot was the type of lamp that includes 36 watt blue LED, 36 watt red LED and 42 watt neon lamp. The data were analyzed using analysis of variance at 5% of the level error, followed by the Duncan Multiple Range Test (DMRT).

The results showed that the effect of lamp types had significant effect on plant height, fresh weight of plant canopy and total weight of fresh plants, and did not significantly affect leaf number, leaf area, leaf greenery, root length, weight of fresh root, weight of dry root, and dry weight of plant. The 36 watt blue LED lamp was a type of lamp that gave the best influence on most observed variables. The concentration of azolla-based liquid organic fertilizer showed no different effect compared to AB mix (control) on all observed variables. There was no interaction effect between the type of lamp and concentration of the azolla-based liquid organic fertilizer on all observed variables.