

**ANALISIS PERTUMBUHAN SELADA OAKLEAF HIJAU DAN MERAH
(*Lactuca sativa* var. *crispa*) TERHADAP VARIASI RASIO LED PUTIH,
MERAH, DAN BIRU PADA *INDOOR FARMING***

INTISARI

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Indoor farming adalah metode pertanian yang dilakukan di dalam lingkungan terkontrol sehingga dapat meningkatkan produksi dan kualitas hasil pertanian sepanjang tahun untuk mewujudkan sektor pertanian yang berkelanjutan dan efisien. Pada penerapan budidaya *indoor farming*, LED menjadi salah satu teknologi yang memiliki potensi dalam meningkatkan produktivitas tanaman karena dapat mengontrol lama penyinaran, intensitas, dan panjang gelombang spektrum cahaya yang dihasilkan. Penelitian ini menguji kombinasi variasi rasio warna putih, merah, dan biru pada LED (rasio P70%: M15%: B15%, rasio P50%: M25%: B25%, dan rasio P30%: M35%: B35%) dan jenis selada oakleaf (hijau dan merah) terhadap parameter pertumbuhan, berupa tinggi selada, berat segar, jumlah daun, berat daun, luas daun, dan kandungan klorofil. Selain itu dibangun juga analisis prediksi pertumbuhan tanaman selada oakleaf menggunakan regresi linier. Data parameter pertumbuhan dianalisis statistik dengan uji ANOVA, MANOVA, T-Test, uji lanjut Duncan dan LSD, serta Uji Korelasi Pearson. Hasil analisis menunjukkan bahwa kombinasi perlakuan variasi LED dan jenis selada oakleaf memberikan pengaruh signifikan pada berat segar dan luas daun. Analisis prediksi regresi linear menghasilkan nilai R^2 hingga 0,9893 dan sudah dapat memprediksi pertumbuhan selada oakleaf hijau dan merah dengan cukup baik. Selain itu, berdasarkan hasil analisis Korelasi Pearson terlihat bahwa perlakuan rasio LED memiliki korelasi dengan berat segar, klorofil a, klorofil total, dan luas daun (30.4-33.6%), sementara jenis selada memiliki korelasi dengan kandungan klorofil a, klorofil b, klorofil total, klorofil a/b, tinggi akhir, berat segar, jumlah daun, dan luas daun (36.4-84.1%).

Kata Kunci: *Indoor farming*, selada oakleaf, LED, spektrum cahaya

ANALYSIS OF GREEN AND RED OAKLEAF LETTUCE (*Lactuca sativa* var.crispa) GROWTH UNDER VARIED RATIOS OF WHITE, RED, AND BLUE LEDs IN INDOOR FARMING

ABSTRACT

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Indoor farming is a method of agriculture practiced in a controlled environment to increase the production and quality of agricultural products throughout the year in order to establish a sustainable and productive agricultural sector. LED is a technology that can potentially increase plant productivity in indoor farming by regulating the photoperiod, intensity, and wavelength of the light spectrum. This study tested varied combinations of white, red, and blue ratios of LEDs (P70%: M15%: B15%, P50%: M25%: B25%, and P30%: M35%: B35%) and types of oakleaf lettuce (green and red) on growth and harvesting parameters, including lettuce plant height, fresh weight, number of leaves, leaf weight, leaf area, and chlorophyll content. A growth predictive analysis for oakleaf lettuce plants was also developed using linear regression. Data growth parameters were analyzed statistically using ANOVA, MANOVA, T-Test, Duncan and LSD tests, and Pearson Correlation. The analysis indicated that the combination of LED variations and different oakleaf lettuce types significantly affected leaf weight, leaf number, and leaf area. The analysis showed that the combination of LED variations and oakleaf lettuce treatments significantly affected fresh weight and leaf area. Linear prediction regression analysis produces an R^2 value of up to 0.9893 and can predict the growth of green and red oakleaf lettuce correctly. In addition, based on the Pearson Correlation analysis, the LED ratio treatment significantly correlates with fresh weight, chlorophyll a, total chlorophyll, and leaf area (30.4-33.6%), while the type of lettuce significantly correlates with the content of chlorophyll a, chlorophyll b, total chlorophyll, chlorophyll a/b, plant height, fresh weight, number of leaves, and leaf area (36.4-84.1%).

Keywords: Indoor farming, oakleaf lettuce, LED, light spectrum