ABSTRAK

RESPONS PERTUMBUHAN DAN HASIL TANAMAN SELADA ROMAINE *(Lactuca sativa* var. *longifolia*) TERHADAP PEMBERIAN BERBAGAI TARAF KADAR AIR YANG DIKONTROL MENGGUNAKAN MIKROKONTROLER ARDUINO UNO

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Selada romaine merupakan sumber pangan nabati dengan kandungan air tinggi dan berperan dalam pemenuhan gizi masyarakat. Salah satu komoditas yang dikonsumsi adalah selada romaine (*Lactuca sativa* var. *longifolia*) dengan jumlah permintaan yang tinggi, sehingga perlu peningkatan produksi melalui budidaya yang optimal. Air merupakan salah satu faktor utama yang menentukan keberhasilan pertumbuhan tanaman, sehingga diperlukan pengaturan kadar air yang tepat. Penelitian ini bertujuan untuk mengetahui taraf kebutuhan air optimal pada tanaman selada romaine menggunakan sistem penyiraman otomatis berbasis Arduino Uno. Penelitian dilaksanakan pada Agustus-September 2025 di Rumah Kaca, Laboratorium Lapang Terpadu, Fakultas Pertanian, Universitas Lampung. Penelitian menggunakan Rancangan Acak Kelompok (RAK) dengan empat taraf kadar air berdasarkan kapasitas lapang, yaitu P1 (20-40%), P2 (40-60%), P3 (60-80%), dan P4 (80-100%). Pengulangan dilakukan sebanyak 4 kali dalam satuan percobaan, sehingga didapatkan 16 satuan percobaan. Data dianalisis menggunakan uji homogenitas Barlett, uji aditivitas Tukey, dan uji lanjut Duncan pada taraf 5%. Hasil penelitian menunjukkan bahwa peningkatan kadar air hingga 100% kapasitas lapang meningkatkan pertumbuhan dan hasil tanaman selada romaine. Hasil perlakuan taraf kadar air 60-80% kapasitas lapang melalui sistem kontrol otomatis arduino uno mampu meningkatkan pertumbuhan dan hasil tanaman selada romaine secara signifikan dibandingkan kadar air 20-40% dan 40-60% kapasitas lapang.

Kata Kunci: Arduino Uno, Kadar Air, Kapasitas Lapang, Pertumbuhan, Selada Romaine

ABSTRACT

THE GROWTH AND YIELD RESPONSE OF ROMAINE LETTUCE (Lactuca sativa var. longifolia) TO THE APPLICATION OF VARIOUS LEVELS OF WATER CONTENT CONTROLLED USING AN ARDUINO UNO MICROCONTROLLER

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Romaine Lettuce are a source of plant-based food with high water content and play a role in meeting the nutritional needs of the community. One of the commodities consumed is romaine lettuce (Lactuca sativa var. longifolia), which is in high demand, so it is necessary to increase production through optimal cultivation. Water is one of the main factors that determine the success of plant growth, so it is necessary to regulate the appropriate water content. This study aims to determine the optimal water requirement for romaine lettuce plants using an Arduino Uno-based automatic irrigation system. The study was conducted in August-September 2025 at the Greenhouse, Integrated Field Laboratory, Faculty of Agriculture, University of Lampung. The study used a Randomized Block Design (RBD) with four water content levels based on field capacity, namely P1 (20-40%), P2 (40-60%), P3 (60-80%), and P4 (80-100%). The experiment was repeated four times, resulting in 16 experimental units. The data were analyzed using Bartlett's homogeneity test, Tukey's additivity test, and Duncan's follow-up test at a 5% level. The results showed that increasing the water content to 100% field capacity increased the growth and yield of romaine lettuce. The results of the treatment with a water content of 60-80% field capacity through the Arduino Uno automatic control system were able to significantly increase the growth and yield of romaine lettuce compared to water contents of 20-40% and 40-60% field capacity.

Keywords: Arduino Uno, Field Capacity, Growth, Romaine Lettuce, Water Content