ABSTRAK

PENGARUH TARAF PEMBERIAN AIR TERHADAP PERTUMBUHAN DAN HASIL TANAMAN RADISH (*Raphanus sativus* L.*)* cv. Cherry Belle MENGGUNAKAN SISTEM IRIGASI TETES YANG DIKENDALIKAN SECARA PRESISI DENGAN MIKROKONTROLER ARDUINO UNO

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Pengelolaan air yang tepat sangat penting dalam budidaya tanaman radish (*Raphanus sativus* L.) cv. Cherry Belle karena tanaman ini peka terhadap perubahan kadar air tanah. Penelitian ini bertujuan menentukan taraf kadar air yang paling optimal terhadap pertumbuhan dan hasil tanaman radish cv. Cherry Belle menggunakan sistem irigasi tetes yang dikendalikan secara presisi dengan mikrokontroler Arduino Uno. Penelitian dilaksanakan pada September-November 2025 di Rumah Kasa Fakultas Pertanian Universitas Lampung menggunakan Rancangan Acak Kelompok (RAK) dengan empat taraf kadar air tanah, yaitu 20-40%, 40-60%, 60-80%, dan 80-100% kapasitas lapang, masing-masing diulang empat kali. Variabel yang diamati meliputi tinggi tanaman, jumlah daun, bobot tanaman, bobot umbi, panjang umbi, dan diameter umbi. Data dianalisis menggunakan analisis ragam dan Uji BNT taraf 5%. Hasil penelitian menunjukkan bahwa taraf kadar air berpengaruh nyata terhadap seluruh variabel pertumbuhan dan hasil tanaman radish cv. Cherry Belle. Perlakuan 80-100% kapasitas lapang menghasilkan nilai tertinggi, namun tidak berbeda nyata dengan perlakuan 60-80% kapasitas lapang. Dengan mempertimbangkan efisiensi penggunaan air, taraf kadar air 60-80% kapasitas lapang dinyatakan sebagai kondisi paling optimal, sedangkan perlakuan 20-40% menghasilkan respons terendah.

Kata Kunci: Arduino Uno, Irigasi Tetes, Kadar Air, Kapasitas Lapang, Kadar Air, Kapasitas Lapang, Radish cv. Cherry Belle.

ABSTRACT

THE EFFECT OF WATER APPLICATION LEVELS ON THE GROWTH AND YIELD OF RADISH (Raphanus sativus L.) cv. CHERRY BELLE USING A PRECISION DRIP IRRIGATION SYSTEM CONTROLLED ON AN ARDUINO MICROCONTROLLER

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Proper water management is essential in radish (Raphanus sativus L.) cv. Cherry Belle cultivation due to the plant's sensitivity to changes in soil moisture content. This study aimed to determine the most optimal soil moisture level for the growth and yield of radish cv. Cherry Belle using a precision drip irrigation system controlled by an Arduino Uno microcontroller. The research was conducted from September to November 2025 in the Greenhouse of the Faculty of Agriculture, Universitas Lampung. A Randomized Complete Block Design (RCBD) was applied with four soil moisture levels: 20-40%, 40-60%, 60-80%, and 80-100% of field capacity, each replicated four times. Observed variables included plant height, number of leaves, plant fresh weight, tuber weight, tuber length, and tuber diameter. Data were analyzed using analysis of variance anova followed by the Least BNT 5% significance level. The results showed that different soil moisture levels significantly affected all growth and yield variables of radish. The 80-100% field capacity treatment produced the highest values; however, it was not significantly different from the 60-80% field capacity treatment. Considering water use efficiency, the 60-80% field capacity level was identified as the most optimal condition, while the 20-40% treatment resulted in the lowest response.

Keywords: *Arduino Uno, Drip Irrigation, Field Capacity, Radish cv. Cherry Belle, Soil Moisture Content.*