

RINGKASAN

Tanaman melon merupakan salah satu komoditas hortikultura yang memiliki nilai ekonomi tinggi dan banyak dibudidayakan di Indonesia. Namun, peningkatan produksi melon seringkali terhambat karena keterbatasan lahan untuk budidaya tanaman melon, sehingga penggunaan lahan sub-optimal seperti pasir pantai menjadi salah satu alternatif untuk budidaya melon. Pengembangan budidaya tanaman hortikultura di lahan pasir pantai seringkali dihadapkan masalah salinitas yang dapat mengganggu pertumbuhan dan fisiologi tanaman. Salah satu solusi untuk mengatasi akumulasi garam akibat salinitas yaitu dapat melalui pembilasan air. Penelitian ini bertujuan untuk menentukan jeda waktu pembilasan yang baik terhadap respon fisiologi dan hasil pertumbuhan tanaman melon terpapar salinitas, menentukan volume pembilasan yang baik terhadap respon fisiologi dan hasil pertumbuhan tanaman melon terpapar salinitas, serta mengetahui interaksi jeda waktu dan volume pembilasan yang memberikan hasil pertumbuhan terbaik pada tanaman melon terpapar salinitas.

Penelitian ini dilaksanakan di *screenhouse* Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto pada bulan September hingga Desember 2024. Rancangan percobaan penelitian ini menggunakan Rancangan Acak Kelompok Lengkap (RAKL) yang terdiri dari 2 faktor, yaitu jeda waktu pembilasan (0 menit, 45 menit, dan 90 menit) dan volume pembilasan (0 mm, 3,5 mm, dan 7 mm). Data penelitian dianalisis dengan menggunakan uji F dan apabila terdapat beda nyata maka dilanjutkan uji DMRT 5% dan dilanjutkan analisis regresi. Variabel yang diamati pada penelitian ini yaitu tinggi tanaman, jumlah cabang, jumlah daun, luas daun, jumlah bunga, persentase bunga jadi, jumlah buah, persentase buah jadi, volume buah, diameter buah bobot segar akar, bobot kering akar, bobot segar batang, bobot kering batang, bobot segar daun, bobot kering daun, bobot segar tanaman, bobot kering tanaman, bobot segar buah, bobot kering buah, kadar klorofil, kadar prolin, bukaan stomata, kerapatan stomata, dan kehijauan daun.

Hasil penelitian menunjukkan bahwa jeda waktu pembilasan menurunkan variabel pertumbuhan, fisiologi, hasil tanaman, dan hanya menunjukkan peningkatan pada kadar prolin vegetatif pada jeda waktu 90 menit (14,75 $\mu\text{mol/g}$). Berdasarkan hasil analisis bahwa volume pembilasan 7 mm meningkatkan kadar klorofil vegetatif (18,86 mg/L), kadar prolin vegetatif (7,36 $\mu\text{mol/g}$), dan bukaan stomata generatif (5,35 μm). Terdapat interaksi jeda waktu dan volume pembilasan pada variabel kerapatan stomata generatif dan persentase bunga jadi. Interaksi jeda waktu 0 menit dengan volume pembilasan 7 mm (L0V2) menghasilkan nilai kerapatan stomata generatif tertinggi yaitu sebesar 198,64 stomata/mm², sedangkan interaksi jeda waktu 90 menit dengan volume pembilasan 0 mm (L2V0) justru menghasilkan nilai persentase bunga jadi tanaman melon tertinggi yaitu sebesar 1,83%.

SUMMARY

Melon (*Cucumis melo* L.) is one of the high-value horticultural commodities widely cultivated in Indonesia. However, increasing melon production is often constrained by the limited availability of suitable land for cultivation. Therefore, the use of sub-optimal land such as coastal sandy soil has become an alternative for melon cultivation. The development of horticultural crops in coastal sandy areas often faces salinity problems, which can disrupt plant growth and physiology. One potential solution to reduce salt accumulation caused by salinity stress is through water rinsing. This study aimed to determine the optimal rinsing interval for improving physiological responses and growth performance of melon plants under salinity stress, to determine the optimal rinsing volume, and to identify the interaction between rinsing interval and volume that provides the best growth performance for melon plants exposed to salinity.

The experiment was conducted from September to December 2024 in a greenhouse at the Faculty of Agriculture, Universitas Jenderal Soedirman, Purwokerto. The experimental design used was a Completely Randomized Block Design (RAKL) with two factors: rinsing interval (0 minutes, 45 minutes, and 90 minutes) and rinsing volume (0 mm, 3.5 mm, and 7 mm). Data were analyzed using analysis of variance (ANOVA), and if significant differences were found, the analysis was continued with Duncan's Multiple Range Test (DMRT) at the 5% level, followed by regression analysis. The observed variables included plant height, number of branches, number of leaves, leaf area, number of flowers, percentage of flower set, number of fruits, percentage of fruit set, fruit volume, fruit diameter, fresh and dry weight of roots, fresh and dry weight of stems, fresh and dry weight of leaves, fresh and dry weight of plants, fresh and dry weight of fruits, chlorophyll content, proline content, stomatal aperture, stomatal density, and leaf greenness.

The results showed that rinsing interval generally reduced growth, physiological, and yield variables, except for vegetative proline content, which increased at a rinsing interval of 90 minutes (14.75 $\mu\text{mol/g}$). Based on the analysis, a rinsing volume of 7 mm increased vegetative chlorophyll content (18.86 mg/L), vegetative proline content (7.36 $\mu\text{mol/g}$), and generative stomatal aperture (5.35 μm). An interaction between rinsing interval and rinsing volume was observed for generative stomatal density and flower set percentage. The interaction of a 0-minute rinsing interval with a rinsing volume of 7 mm (L0V2) resulted in the highest generative stomatal density (198.64 stomata/ mm^2), while the interaction of a 90-minute rinsing interval with a rinsing volume of 0 mm (L2V0) produced the highest flower set percentage (1.83%) in melon plants.