RINGKASAN

Melon merupakan buah yang diminati masyarakat Indonesia sehingga memiliki potensi untuk dibudidayakan. Peningkatan budidaya tanaman melon dilakukan untuk memenuhi kebutuhan masyarakat, namun penurunan luas lahan pertanian menjadi sebuah hambatan. Pemanfaatan lahan marginal menjadi solusi untuk mempertahankan dan meningkatkan produksi tanaman pangan, termasuk melon. Lahan pasir pantai sebagai salah satu lahan marginal diharapkan dapat dimanfaatkan untuk budidaya tanaman melon, meskipun perlu dilakukan penyesuaian lingkungan dengan menggunakan bahan pembenah tanah seperti pupuk kandang dan tanah lempung untuk campuran media tanam. Selain itu, kondisi lingkungan di lahan pasir pantai yang terpapar garam melalui udara yang disebut salinitas udara. Diperlukan pembilasan untuk mengurangi cekaman salinitas sehingga tanaman dapat tetap tumbuh. Tujuan dari penelitian ini untuk mengetahui pengaruh salinitas udara terhadap pertumbuhan dan hasil tanaman melon, selain itu untuk mengetahui pengaruh volume pembilasan terhadap pertumbuhan dan hasil tanaman melon, dan mengetahui interaksi antara salinitas udara dan volume pembilasan terhadap pertumbuhan dan hasil tanaman melon.

Penelitian ini menggunakan Rancangan Petak Terbagi (RPT) dengan Rancangan Acak Kelompok Lengkap (RAKL) yang terdiri dari 2 faktor. Salinitas udara (S) sebagai petak utama yang terdiri dari 3 taraf yaitu, 0 mS/cm (S_0), 12 mS/cm (S_1), dan 24 mS/cm (S_2). Volume pembilasan (V) sebagai anakan petak yang terdiri dari 3 taraf, yaitu 0 mm (V_0), 3,5 mm (V_1), dan 7 mm (V_2). Setiap perlakuan diulang sebanyak 3 kali dan setiap unit terdiri dari 3 polibag. Variabel pertumbuhan yang diamati adalah tinggi tanaman, jumlah cabang, jumlah daun, luas daun, bobot segar akar, bobot segar batang, bobot segar daun, bobot segar tanaman, bobot kering akar, bobot kering batang, bobot kering daun, dan bobot kering tanaman. Variabel fisiologi yang diamati kadar klorofil fase vegetatif dan generatif, kehijauan daun fase vegetatif dan generatif, kadar prolin fase vegetatif dan generatif, bukaan stomata fase vegetatif dan generatif, dan kerapatan stomata fase vegetatif dan generatif. Variabel hasil yang diamati adalah jumlah bunga, persentase bunga terbentuk, jumlah buah, persentase buah panen, diameter buah, volume buah, bobot segar buah, bobot kering buah, dan hasil tanaman. Data hasil pengamatan tersebut dianalisis menggunakan Uji F dan Uji DMRT pada taraf kesalahan 5%.

Hasil penelitian menunjukkan bahwa salinitas udara meningkatkan bobot kering akar, kadar klorofil vegetatif, kerapatan stomata generatif, diameter buah, dan volume buah. Salinitas udara 24 mS/cm menghasilkan nilai tertinggi pada variabel bobot kering akar (0,5 g), kerapatan stomata generatif (192,02 stomata/mm^2). Salinitas udara 12 mS/cm menghasilkan nilai tertinggi pada kadar diameter buah (5,27 g) dan volume buah (84,42 cm^3). Salinitas 0 mS/cm menghasilkan nilai tertinggi pada kadar klorofil vegetatif (16,91 mg/L). Volume pembilasan 7 mm menghasilkan nilai tertinggi pada variabel jumlah daun (11,5 helai), bobot segar tanaman (70 g), kadar klorofil vegetatif (16,97 mg/L),

sementara volume pembilasan 0 mm memberikan nilai tertinggi pada variabel prolin generatif (23,05 µmol/g). Interaksi antara salinitas udara dan volume pembilasan berpengaruh terhadap variabel jumlah cabang, bobot segar akar, kadar prolin vegetatif, kerapatan stomata vegetatif, dan jumlah bunga. Perlakuan terbaik terhadap jumlah cabang (14,33 cabang), kerapatan stomata vegetatif (234 stomata/mm^2), dan jumlah bunga (2,33 bunga) adalah tanpa penyemprotan salinitas disertai pembilasan 7 mm. Perlakuan terbaik terhadap bobot segar akar (2,81 g) adalah penyemprotan salinitas 24 mS/cm disertai pembilasan 3,5 mm. Perlakuan terbaik terhadap kadar prolin vegetatif (24,24 µmol/g) adalah penyemprotan salinitas udara 12 mS/cm disertai pembilasan 7 mm.

SUMMARY

Melon is a fruit that is popular among the Indonesian population, thus having significant potential for cultivation. The increase in melon cultivation is carried out to meet community needs, however the reduction in agricultural land area poses a challenge. The utilization of marginal land is seen as a solution to sustaibn and enhance food crop production, including melons. Coastal sandy soil, as one type of marginal land is excpected to be utilized for melon cultivation, although environmental adjustments are necessary using soil amandements such as manure and clay for plant growth media. Additionally, the environmental conditions in coastasl sandr land are affected by airborne salt, referred to air salinity. Leaching is required to reduce salinity stress so that the plants can continue to grow. Teh objectives of this research are to determine the effect of air salinity on groeth and yield of melon plants, to assess the influence of leaching volume on growth and yield of melon plants, and to examine the interaction between air salinity and leaching volume on growth and yield of melon plants.

This research used a Split Plot Design (SPD) with Randomized Complete Block Design (RCBD) consisting of two factors. Air Salinity (S) serves as the main plot, comprising three levels, 0 mS/cm (S_0), 12 mS/cm (S_1), dan 24 mS/cm (S_2). Leaching volume (V) acts as the subplot, consisting of three levels, 0 mm (V_0), 3,5 mm (V_1), dan 7 mm (V_2). Each treatment is replicated three times, witch each unit consisting of three polybags. The growth variables that observed including plant height, number of branches, number of leaves, leaf area, fresh root weight, fresh stem weight, fresh leaf weight, fresh plant weight, dry root weight, dry stem weight, dry leaf weight, and dry plant weight. The physiological variables that measured are chlorophyll content druing vegetative and generative phases, leaf greenness during vegetative and generative phases, proline content during vegetative and generative phases, stomatal opening during vegetative and generative phases, and stomatal density during vegetative and generative phases. The yield variables that observed including the number of flowers, percentage of flower set, number of fruits, percentage of fruits set, fruit diameter, fruit volume, fresh fruit weight, dry fruit weight, and overall plant yield. The collected data from these observations were analyzed using the F Test and DMRT at significance level of 5%.

The results of the study indicate that air salinity increasing dry root weight, vegetative chlorophyll content, generative stomatal density fruit diamater, and fruit volume. An air salinity level of 24 mS/cm produced the highest values for dry root weight (0,5g) and generative stomatal density (192,02 stomata/mm^2). An air salinity level of 12 mS/cm produced the best results for fruit diameter (5,27 g) and fruit volume (84,42 cm^3). An air salinity level of 0 mS/cm produced the best results for vegetative chlorophyll content (16,91 mg/L). A leaching volume of 7 mm resulted in the optimal values for the number of leaves (11,5 leaves), fresh palnt weight (70 g), and vegetative chlorophyll content (16.97 mg/L), while a leaching volume of 0 mm provided the highest value for generative proline

content (23,05 µmol/g). The interaction between air salinity and leaching volume significantly affects in the number of branches, fresh root weight, vegetative proline content, vegetative stomatal density, and number of flowers. The best treatment for the number of branches (14,33 branches), vegetative stomatal density (234 stomata/mm^2), and number of flowers (2,33 flowers) was without salinity spraying accompanied by 7 mm volume of leaching. The optimal treatment for fresh root weight (2,81 g) was 24 mS/cm salinity spraying accompanied by 3,5 mm volume of leaching, while the best treatment for vegetative proline content (24,24 µmmol/g) was 12 mS/cm salinity spraying with 7 mm volume of leaching.