

RINGKASAN

Tanaman tomat merupakan tanaman semusim yang banyak dimanfaatkan masyarakat Indonesia. Produksi tomat di Indonesia mengalami fluktuasi karena adanya penyempitan lahan pertanian yang subur dan alih fungsi lahan. Budidaya tanaman tomat dapat memanfaatkan lahan sub-optimal, seperti lahan pasir pantai. Pertumbuhan tanaman tomat di lahan pasir pantai dapat dipengaruhi oleh faktor salinitas udara. Pengaruh negatif salinitas udara dapat diminimalisir dengan cara pencucian garam menggunakan air. Tujuan dari penelitian ini yaitu mengetahui pengaruh salinitas udara terhadap fisiologi dan hasil pertumbuhan tanaman tomat, mengetahui pengaruh jeda waktu penyemprotan air terhadap fisiologi dan hasil pertumbuhan tanaman tomat, dan mengetahui interaksi antara pengaruh salinitas udara dan jeda waktu penyemprotan air terhadap fisiologi dan hasil pertumbuhan tanaman tomat.

Penelitian ini merupakan penelitian eksperimental dengan rancangan lingkungan Rancangan Acak Kelompok Lengkap (RAKL). Penelitian ini terdiri dari 2 faktor, yaitu faktor pertama salinitas udara (S), meliputi 0 mS/cm, 12 mS/cm, 24 mS/cm dan faktor kedua jeda waktu penyemprotan air (L), meliputi 0 menit, 45 menit, 90 menit. Data hasil pengamatan dianalisis menggunakan sidik ragam ANOVA (Analisis Varian) pada taraf 5% dan dilanjutkan dengan uji lanjutan UJGD (Uji Lanjut Ganda Duncan) pada taraf 5%, serta analisis Regresi.

Hasil penelitian menunjukkan bahwa pengaruh salinitas udara dapat meningkatkan kadar prolin fase vegetatif hingga mencapai titik maksimum 11,08 mS/cm, yaitu 22,88 $\mu\text{mol/g}$, kemudian penambahan konsentrasi hingga 24 mS/cm menyebabkan penurunan. Salinitas udara juga dapat menurunkan kerapatan stomata generatif hingga titik maksimum 11,10 mS/cm, yaitu 79,16 stomata/ mm^2 , kemudian penambahan konsentrasi hingga 24 mS/cm menyebabkan peningkatan. Pengaruh jeda waktu penyemprotan air dapat menurunkan bobot segar daun hingga titik minimum 44,88 menit, yaitu 5,35 g, kemudian penambahan jeda waktu hingga 90 menit menyebabkan peningkatan. Jeda waktu penyemprotan air terhadap bobot segar buah mengalami peningkatan secara linier hingga titik maksimum pada perlakuan 90 menit, yaitu 18,85 g. Dua perlakuan tersebut menghasilkan interaksi pada bukaan stomata vegetatif. Interaksi pada perlakuan jeda waktu penyemprotan air 0 terhadap salinitas udara mengalami penurunan hingga titik minimum 16 mS/cm, yaitu 2,12 μm , kemudian penambahan salinitas udara hingga 24 mS/cm terjadi sedikit peningkatan, sedangkan pada perlakuan jeda waktu penyemprotan 45 menit terhadap salinitas udara mengalami peningkatan yang rendah hingga 24 mS/cm dan pada perlakuan jeda waktu 90 menit menghasilkan nilai yang stabil. Bukaan stomata tertinggi terjadi pada perlakuan jeda waktu penyemprotan air 0 menit terhadap salinitas udara 0 mS/cm, yaitu 6,67 μm .

SUMMARY

Tomato is an annual plant widely utilized by the Indonesian population. Tomato production in Indonesia experiences fluctuations due to the reduction of fertile agricultural land and land-use conversion. Tomato cultivation can be carried out on sub-optimal land, such as coastal sandy soil. The growth of tomato plants in coastal sandy soil can be influenced by air salinity. The negative effects of air salinity can be minimized by leaching the salts with water. The objectives of this study are to determine the effect of air salinity on the physiology and growth yield of tomato plants, to determine the effect of the water application delay on the physiology and growth yield of tomato plants, and to determine the interaction between the effects of air salinity and the water application delay on the physiology and growth yield of tomato plants.

This study was an experimental using a Completely Randomized Block Design (CRBD). The study consists of two factors: the first factor is air salinity (S), which includes 0 mS/cm, 12 mS/cm, and 24 mS/cm; and the second factor is the interval time of water spraying (L), which includes 0 minutes, 45 minutes, and 90 minutes. The experimental data were analyzed using Analysis of Variance (ANOVA) at a 5% significance level, followed by the Duncan Multiple Range Test (DMRT) at a 5% level, as well as regression analysis.

The results of the study showed that air salinity increased proline content during the vegetative phase, reaching a maximum point at 11,08 mS/cm with a value of 22,88 $\mu\text{mol/g}$. Further increase in salinity concentration up to 24 mS/cm led to a decrease in proline levels. Air salinity also decreased stomatal density during the generative phase, reaching its lowest point at 11,10 mS/cm with 79,16 stomata/mm², followed by an increase as salinity continued to rise to 24 mS/cm. The water application delay reduced leaf fresh weight to its minimum point at 44,88 minutes, with a value of 5,35 g. Further delay up to 90 minutes caused an increase in leaf fresh weight. The fresh weight of fruit increased linearly, reaching the highest value at the water application delay of 90 minutes with a value 18,85 g. The combination of both treatments affected stomatal aperture during the vegetative phase. At the 0 minute water application delay, increasing air salinity caused a decrease in stomatal aperture, reaching the lowest value of 2,12 μm at 16 mS/cm, followed by a slight increase up to 24 mS/cm. At the water application delay of 45 minutes, stomatal aperture slightly increased as salinity rose, while at the water application delay of 90 minutes, the values remained relatively stable. The highest stomatal aperture was observed in the treatment with the 0 minute water application delay and 0 mS/cm air salinity, with a value of 6,67 μm .