RINGKASAN

Kubis (*Brassica oleracea* var. *capitata* L.) merupakan salah satu tanaman sayuran yang banyak dikonsumsi dan dibudidayakan oleh masyarakat di Indonesia dengan nilai vitamin serta serat yang tinggi. Namun lahan produktif yang digunakan untuk budidaya kubis semakin menurun. Salah satu upaya untuk meningkatkan produksi kubis yaitu melalui usaha ekstensifikasi dengan memanfaatkan lahan marginal dan lahan pasir pantai yang memiliki kandungan garam tinggi (salin). Penelitian ini bertujuan untuk 1) membedakan respon pertumbuhan dan hasil tanaman kubis dengan berbagai cara pemberian larutan salinitas, 2) membedakan respon pertumbuhan dan hasil tanaman kubis pada berbagai konsentrasi larutan salinitas, 3) membedakan respon pertumbuhan dan hasil tanaman kubis dengan berbagai frekuensi larutan salinitas, 4) membandingkan interaksi cara pemberian salinitas, freukeunsi, dan konsentrasi larutan salinitas terhadap pertumbuhan dan hasil tanaman kubis.

Penelitian dilaksanakan pada bulan Desember 2021 sampai bulan Mei 2022 di *screenhouse* Fakultas Pertanian Universitas Jenderal Soedirman. Penelitian ini menggunakan RAKL (Rancangan Acak Kelompok Lengkap) dengan 3 faktor. Faktor pertama yaitu cara pemberian dengan 2 taraf perlakuan meliputi pemberian melalui tanah (S_1) dan pemberian melalui udara (S_2). Faktor kedua yaitu konsentrasi pemberian larutan salinitas dengan 3 taraf perlakuan meliputi 0 dS/m (K_1), 9 dS/m (K_2) dan 18 dS/m (K_3). Faktor ketiga yaitu frekuensi pemberian larutan salinitas dengan 3 taraf perlakuan meliputi 1 kali/ hari (F_1), 2 kali/hari (F_2), dan 3 kali/hari (F_3). Variabel yang diamati adalah variabel fisiologi : kadar klorofil, kadar prolin, kerapatan stomata, bukaan stomata, dan kehijauan daun. Variabel pertumbuhan: tinggi tanaman, jumlah daun, luas daun, kerusakan daun, umur pembentukan krop, diameter krop, bobot segar : akar, batang, daun, dan bobot kering: akar, batang, daun. Variabel hasil : bobot segar krop, bobot kering krop, bobot hasil segar krop. Variabel lingkungan yaitu pengukuran Ec tanah.

Hasil penelitian menunjukkan bahwa 1) cara pemberian larutan salinitas melalui udara lebih mengingkatkan kadar prolin dibandingkan cara pemberian larutan salinitas melalui tanah, sedangkan cara pemberian larutan salinitas melalui tanah lebih meningkatkan EC tanah fase vegetatif dibandingkan cara pemberian larutan salinitas melalui udara. 2) semakin meningkatnya konsentrasi larutan salinitas menurunkan variabel bobot kering akar, bobot segar batang, bobot segar daun, klorofil fase generatif, kerapatan stomata fase vegetatif, bobot segar krop ($Y= 0{,}6791x^2 – 22{,}335x + 302{,}23$). Bobot kering krop ($Y = 0{,}0447x^2 – 1{,}4477x + 22{,}574$). Diameter krop ($Y= 0{,}0271x^2 – 0{,}9352x + 30{,}5$). Bobot hasil segar krop ($Y= 0{,}0424x^2 – 1{,}3959 + 18{,}889$). Namum berbeda dengan variabel prolin dan EC tanah dimana semakin tinggi konsentrasi larutan salinitas maka kadar prolin dan EC tanah semakin tinggi. Prolin ($Y = 0{,}1014x + 1{,}9098$). EC tanah fase vegetatif ($Y = 0{,}0165x + 1{,}1165$). EC tanah fase panen ($Y= 0{,}0722x + 1{,}6883$). 3) semakin banyak frekuensi pemberian larutan salinitas menurunkan bukaan stomata fase vegetatif ($Yv = -0{,}4444x + 3{,}5463$). Bukaan stomata fase generatif ($Yg = -0{,}3333x$

+ 3,0278). Kerapatan stomata fase vegetatif (Y = -26,089x + 404,82). 4) terdapat interaksi perlakuan antara cara pemberian dan konsentrasi larutan salinitas berpengaruh terhadap variabel prolin dan EC tanah fase vegetatif. Hasil prolin tertinggi (5,52 µ mol/g) pada perlakuan melalui udara dengan konsentrasi larutan salinitas 18 dS/m, sedangkan hasil prolin terendah (1,24 µ mol/g) pada perlakuan melalui tanah dengan konsentrasi larutan salinitas 0 dS/m. Hasil EC tanah pada fase vegetatif tertinggi (1,70 dS/m) dengan perlakuan melalui tanah dengan konsentrasi 18 dS/m, sedangkan EC tanah yang terendah (1,05 dS/m) pada cara pemberian melalui tanah dengan konsentrasi larutan yang paling rendah yaitu 0 dS/m.

SUMMARY

Cabbage (Brassica oleracea var. capitata L.) is a vegetable crop that is widely consumed and cultivated by people in Indonesia with high vitamin and fiber values. However, the productive land used for cabbage cultivation is decreasing. One of the efforts to increase cabbage production is through extensification efforts by utilizing marginal land and coastal sandy land that has a high salt content (saline). This study aims to 1) differentiate the growth response and yield of cabbage with various salinity solutions, 2) differentiate the growth response and yield of cabbage at various concentrations of salinity solution, 3) differentiate the growth response and yield of cabbage with various frequencies of salinity solution, 4) comparing the combination of salinity, frequency, and concentration of salinity solution on the growth and yield of cabbage.

The research was carried out from December 2021 to May 2022 at the screenhouse of the Faculty of Agriculture, Jenderal Sudirman University. This study used RAKL (Completely Randomized Block Design) with 3 factors. The first factor is the method of administration with 2 levels of treatment including administration by soil (S_1) and administration by air (S_2). The second factor is the concentration of salinity solution with 3 treatment levels including 0 dS/m (K_1), 9 dS/m (K_2) and 18 dS/m (K_3). The third factor is the frequency of administration of salinity solution with 3 levels of treatment including 1 time/day (F_1), 2 times/day (F_2), and 3 times/day (F_3). The variables observed were physiological variables: chlorophyll content, proline content, stomata density, stomata opening, and greenness of the leaves. Growth variables: plant height, number of leaves, leaf area, leaf damage, age of shoot formation, diameter of the crop, fresh weight: roots, stems, leaves, and dry weight: roots, stems, leaves. Yield variables: fresh weight of the crop, dry weight of the crop, the weight of the fresh crop. The environmental variable is the soil Ec measurement.

The results showed that 1) the method of administering salinity solution through the air increased proline levels more than the method of administering salinity solution through the soil, while the method of administering salinity solution through the soil increased the EC of the vegetative phase of the soil more than the method of administering salinity solution through the air. 2) the increasing concentration of salinity solution decreased root dry weight, stem fresh weight, leaf fresh weight, generative phase chlorophyll, vegetative phase stomata density, crop fresh weight ($Y= 0,6791x^2 – 22,335x + 302,23$). Crop dry weight ($Y = 0,0447x^2 – 1,4477x + 22,574$). Crop diameter ($Y= 0,0271x^2 – 0,9352x + 30,5$). Weight of fresh crop yield ($Y= 0,0424x^2 – 1,3959 + 18,889$). However, in contrast to the proline and soil EC variables, the higher the concentration of salinity solution, the higher the proline and EC levels of the soil. Proline ($Y = 0,1014x + 1,9098$). EC soil vegetative phase ($Y = 0,0165x + 1,1165$). EC soil harvest phase ($Y= 0,0722x + 1,6883$). 3) the more frequency of administration of salinity solution, the lower the stomata opening of the vegetative phase, the stomata opening of the generative phase and vegetative phase stomata density. 4) there is a combination of treatment

between the method of administration and the concentration of salinity solution that affects the proline and EC variables of the vegetative phase of the soil. The highest proline yield (5,52 μ mol/g) was treated by air with a salinity solution concentration of 18 dS/m, while the lowest proline yield (1,24 μ mol/g) was obtained in the soil treatment with a salinity solution concentration of 0 dS/m. Soil EC results in the highest vegetative phase (1,70 dS/m) with soil treatment with a concentration of 18 dS/m, while the lowest soil EC (1,05 dS/m) was administered through soil with the lowest solution concentration of 0 dS/m.