

RINGKASAN

Kedelai [*Glycine max* (L.) Merrill] merupakan tanaman yang berperan penting dalam mencukupi kebutuhan gizi masyarakat. Produksi kedelai belum mampu memenuhi kebutuhan tersebut karena lahan-lahan di Indonesia mengalami perubahan fungsi dari tanah pertanian menjadi tanah non pertanian. Lahan yang tersisa adalah lahan yang memiliki mutu dan produktivitas rendah seperti lahan salin. Perakitan kultivar yang toleran salinitas dapat menjadi solusi untuk meningkatkan produktivitas kedelai. Pengetahuan mengenai perubahan karakter anatomi dan fisiologi akibat cekaman salinitas diperlukan dalam perakitan kultivar tersebut. Penelitian ini bertujuan untuk mengetahui respon anatomis dan fisiologis daun kedelai kultivar Sinabung pada kadar garam yang berbeda dan mengetahui kadar garam yang optimum untuk pertumbuhan kedelai.

Penelitian ini menggunakan metode eksperimental dengan Rancangan Acak Lengkap (RAL). Perlakuan kadar garam dengan 5 taraf yaitu kadar garam 0 mM, 25 mM, 50 mM, 75 mM, dan 100 mM. Masing-masing perlakuan diulang 5 kali, sehingga terdapat 25 unit percobaan. Variabel bebas yaitu kadar garam yang berbeda, sedangkan variabel terikat yaitu respon anatomis dan fisiologis daun kedelai. Parameter yang diamati adalah respon anatomis daun meliputi tebal epidermis atas dan bawah, tebal mesofil, rasio palisade, panjang dan lebar stomata, dan kerapatan stomata dan trikوماتa per 1 mm² daun serta respon fisiologis daun meliputi kadar klorofil dan kadar karotenoid. Data hasil pengukuran respon anatomis dan fisiologis daun dianalisis menggunakan uji analisis ragam (ANOVA) dengan tingkat kesalahan 5% dan 1%. Hasil ANOVA diuji lanjut menggunakan Beda Nyata Jujur (BNJ) dengan tingkat kesalahan 5%. Hasil penelitian menunjukkan bahwa perlakuan kadar garam yang berbeda memberi respon pada anatomis daun kedelai kultivar Sinabung yaitu menurunkan tebal mesofil dan kerapatan stoma serta meningkatkan panjang stoma epidermis atas dan bawah. Perlakuan kadar garam tidak memberikan pengaruh pada tebal epidermis, rasio palisade, lebar stoma, dan kerapatan trikوماتa serta fisiologi daun meliputi kadar klorofil dan kadar karoten. Pertumbuhan kedelai kultivar Sinabung optimum hingga perlakuan kadar garam 100 mM.

Kata kunci: *anatomi daun, kadar garam, kedelai, klorofil*

SUMMARY

Soybean [*Glycine max* (L.) Merrill] is a plant that plays an important role to supply the nutritional needs of the community. Soybean production has not been able to supply these needs because land in Indonesia has changed its function from agricultural land to non-agricultural land. The remaining land is land that has low quality and productivity, such as saline land. Assembling salinity tolerant varieties can be a solution to increase soybean productivity. Knowledge of changes in anatomical and physiological characters due to salinity stress is required in the assembly of these varieties. This study aims to determine the anatomical and physiological responses of soybean leaves of the Sinabung cultivar at different salt levels and to determine the optimum salt content for soybean growth.

This research was used experimental method with Completely Randomized Design (CRD). Treatment of salt content with 5 levels, namely 0 mM, 25 mM, 50 mM, 75 mM, and 100 mM. Each treatment was repeated 5 times, so there were 25 experimental units. The independent variable was different salt content, while the dependent variable was the anatomical and physiological response of soybean leaves. Parameters that observed were anatomical responses of leaves including upper and lower epidermis thickness, mesophyll thickness, palisade ratio, stomata length and width, and stomatal and trichome density per 1 mm² leaf as well as leaf physiological responses including chlorophyll content and carotenoid levels. The results of the measurement of the anatomical and physiological responses of leaves were analyzed using analysis of variance (ANOVA) with an error rate of 5% and 1%. The ANOVA results were further tested using Honest Significant Difference (BNJ) with an error rate of 5%. The results showed that different salinity treatments gave a response to the anatomy of soybean leaves of the Sinabung cultivar, namely decreasing mesophyll thickness and stoma density and increasing the length of the upper and lower epidermal stoma. Treatment of salt content had no effect on epidermal thickness, palisade ratio, stoma width, and trichome density as well as leaf physiology including chlorophyll content and carotene content. Optimum growth of soybean cultivar Sinabung up to 100 mM salt content treatment.

Keywords: *leaf anatomy, salt content, soybean, chlorophyll*