

RINGKASAN

Stevia (Stevia rebaudiana) merupakan salah satu alternatif pemanis alami pengganti gula yang rendah kalori dan bersifat non karsinogenik, sehingga aman dikonsumsi dalam jangka panjang oleh penderita penyakit diabetes. *Stevia* mengandung senyawa pemanis yang memiliki tingkat kemanisan 200-300 kali lebih tinggi dari gula tebu (sukrosa). Budidaya *stevia* terkendala oleh terbatasnya lahan yang dapat mendukung pertumbuhan tanaman *stevia*, akibat dari alih fungsi lahan dan persaingan dengan komoditas lain. Salah satu usaha yang dapat dilakukan untuk mengembangkan tanaman *stevia* adalah dengan memanfaatkan lahan marginal seperti Ultisol. Lahan ini tersebar cukup luas sekitar 25% dari luas total daratan Indonesia. Pengembangan tanaman *stevia* di lahan marginal seperti Ultisol dapat dibantu dengan penambahan bakteri pelarut fosfat. Bakteri pelarut fosfat merupakan bakteri yang dapat melarutkan P yang terikat oleh Al dan Fe, sehingga menjadi tersedia dan dapat diserap oleh tanaman.

Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) yang terdiri dari 8 perlakuan, yaitu P0 (Tanpa isolat/kontrol), P2 (Isolat N15), P3 (Isolat N19), P4 (Konsorsium isolat S3 dan N15), P5 (Konsorsium isolat S3 dan N19), P6 (Konsorsium isolat N15 dan N19), dan P7 (Konsorsium isolat S3 dan N15 dan N19). Setiap perlakuan diulang sebanyak 4 kali, sehingga terdapat 32 unit percobaan dan setiap unit percobaan terdapat 4 tanaman, sehingga diperoleh 128 tanaman. Penelitian ini dilaksanakan pada bulan Februari 2024 hingga Juni 2024. Variabel yang diamati yaitu bobot daun segar, bobot daun kering, bobot akar segar, bobot akar kering, bobot brangkasan segar, bobot brangkasan kering, indeks panen, kadar kemanisan, kandungan klorofil, dan kerapatan bakteri tanah. Data hasil pengamatan dianalisis menggunakan uji ANOVA dengan tingkat kesalahan 5%.

Hasil penelitian menunjukkan bahwa pemberian bakteri pelarut fosfat berpengaruh terhadap hasil tanaman *stevia* dan kerapatan bakteri pada tanah Ultisol. Perlakuan konsorsium isolat bakteri S3, N15, dan N19 memberikan hasil terbaik pada variabel bobot daun segar, bobot daun kering, bobot akar segar, bobot akar kering, bobot brangkasan segar, dan bobot brangkasan kering. Pemberian bakteri pelarut fosfat mampu meningkatkan kerapatan bakteri pada tanah Ultisol. Perlakuan konsorsium isolat bakteri S3, N15, dan N19 memberikan pengaruh terbaik dengan kerapatan $4,8 \times 10^8$ cfu/mL.

SUMMARY

Stevia (Stevia rebaudiana) is a natural sweetener alternative to sugar that is low in calories and non-carcinogenic, so it is safe for long-term consumption by diabetes sufferers. Stevia contains sweetening compounds which have a sweetness level 200-300 times higher than cane sugar (sucrose). Stevia cultivation is hampered by limited land that can support the growth of stevia plants, as a result of land conversion and competition with other commodities. One effort that can be made to develop stevia plants is to utilize marginal land such as Ultisol. This land spread quite widely, around 25% of Indonesia's total land area. The development of stevia plants on marginal land such as Ultisol can be assisted by the addition of phosphate solubilizing bacteria. Phosphate solubilizing bacteria are bacteria that can dissolve P bound by Al and Fe, so that it becomes available and can be absorbed by plants.

This research used a Randomized Block Design consisting of 8 treatments, namely P0 (No isolate/control), P2 (Isolate N15), P3 (Isolate N19), P4 (Consortium of isolates S3 and N15), P5 (Consortium of isolate S3 and N19), P6 (Consortium of isolates N15 and N19), and P7 (Consortium of isolates S3 and N15 and N19). Each treatment was repeated 4 times, so there were 32 experimental units and each experimental unit contained 4 plants, so 128 plants were obtained. This research was carried out from February 2024 to June 2024. The variables observed were fresh leaf weight, dry leaf weight, fresh root weight, dry root weight, fresh stover weight, dry stover weight, harvest index, sweetness content, chlorophyll content, and density. soil bacteria. Observation data were analyzed using the ANOVA test with an error rate of 5%.

The results of the research showed that the application of phosphate-solubilizing bacteria affects the yield of stevia plants and bacterial density in Ultisol soil. The treatment with a consortium of bacterial isolates S3, N15, and N19 resulted in the best outcomes for variables such as fresh leaf weight, dry leaf weight, fresh root weight, dry root weight, fresh biomass weight, and dry biomass weight. The application of phosphate-solubilizing bacteria was able to increase the bacterial density in Ultisol soil. The treatment with the consortium of bacterial isolates S3, N15, and N19 had the most significant impact, with a density of $4,8 \times 10^8$ cfu/mL.