

## ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh pemberian biochar yang berasal dari ampas tebu terhadap pertumbuhan vegetatif tanaman kangkung (*Ipomoea reptans*). Latar belakang penelitian ini didasarkan pada melimpahnya limbah ampas tebu dari UMKM air tebu di Kota Medan yang belum dimanfaatkan secara optimal, serta kebutuhan akan alternatif pupuk organik ramah lingkungan untuk mendukung pertanian berkelanjutan. Ampas tebu diolah melalui proses pirolisis menjadi biochar yang kemudian diaplikasikan sebagai pembenah media tanam. Penelitian dilaksanakan selama tiga bulan (September–November 2025) menggunakan Rancangan Acak Kelompok (RAK) non faktorial dengan 4 perlakuan dan 6 ulangan, sehingga diperoleh 24 unit percobaan. Perlakuan terdiri atas P0 (kontrol), P1 (0,5 kg biochar + 3 kg tanah), P2 (1 kg biochar + 3 kg tanah), dan P3 (1,5 kg biochar + 3 kg tanah). Parameter yang diamati meliputi tinggi tanaman, jumlah daun, luas daun, berat kotor, dan berat bersih. Data dianalisis menggunakan uji ANOVA pada taraf 5% dan dilanjutkan dengan uji Tukey apabila berbeda nyata. Hasil analisis ragam menunjukkan bahwa pemberian biochar ampas tebu berpengaruh nyata terhadap tinggi tanaman dan jumlah daun pada seluruh minggu setelah tanam (MST 1–4), dimana nilai F hitung lebih besar dari F tabel 5%. Namun demikian, hasil uji lanjut Tukey menunjukkan bahwa perbedaan antar perlakuan tidak berbeda nyata pada masing-masing waktu pengamatan. Secara umum, seluruh perlakuan menunjukkan peningkatan pertumbuhan seiring bertambahnya umur tanaman. Berdasarkan hasil penelitian dapat disimpulkan bahwa biochar ampas tebu berpotensi sebagai bahan pembenah tanah dan alternatif pupuk organik ramah lingkungan dalam budidaya kangkung, meskipun pada dosis yang digunakan belum menunjukkan perbedaan pertumbuhan yang signifikan antar perlakuan. Pemanfaatan limbah ampas tebu menjadi biochar mendukung konsep ekonomi sirkular dan pertanian berkelanjutan.

**Kata kunci: ampas tebu, biochar, kangkung, pertumbuhan vegetatif, RAK**

## ABSTRACT

*This study aimed to determine the effect of biochar derived from sugarcane bagasse on the vegetative growth of water spinach (*Ipomoea reptans*). The background to this study was based on the abundant, underutilized bagasse waste from sugarcane juice MSMEs in Medan City, as well as the need for alternative, environmentally friendly organic fertilizers to support sustainable agriculture. Bagasse was processed through pyrolysis to produce biochar, which was then applied as a planting medium amendment. The study was conducted for three months (September–November 2025) using a non-factorial Randomized Block Design (RBD) with four treatments and six replications, resulting in 24 experimental units. The treatments consisted of P0 (control), P1 (0.5 kg biochar + 3 kg soil), P2 (1 kg biochar + 3 kg soil), and P3 (1.5 kg biochar + 3 kg soil). Parameters observed included plant height, number of leaves, leaf area, gross weight, and net weight. Data were analyzed using ANOVA at the 5% level, followed by Tukey's test if significant differences were present. The analysis of variance results showed that the application of bagasse biochar significantly affected plant height and leaf number throughout the weeks after planting (WAP 1–4), with the calculated F-value greater than the F-table value of 5%. However, further Tukey's test results indicated that differences between treatments were not significantly different at each observation time. In general, all treatments showed increased growth as the plants aged. qBased on the results of the study, it can be concluded that bagasse biochar has the potential to be a soil amendment and an alternative environmentally friendly organic fertilizer for kale cultivation, although the dosage used did not show significant differences in growth between treatments. Utilizing bagasse waste into biochar supports the concept of a circular economy and sustainable agriculture.*

**Keywords:** *bagasse, biochar, kale, vegetative growth, RAK*