

ABSTRACT

The degradation of soil chemical and biological properties resulting from unsustainable land management has become one of the major constraints limiting the productivity of sweet corn (*Zea mays L. saccharata Sturt*). The application of biochar and biofertilizers has emerged as a promising approach to improving soil fertility by enhancing nutrient availability, stimulating microbial activity, and improving the soil environment for plant growth. This study aimed to evaluate the effects of rice husk and coconut shell biochar combined with biofertilizers on the chemical and biological characteristics of soil and their relationship with the growth and yield of sweet corn. The experiment was arranged in a factorial Randomized Block Design (RBD), with two factors and three replications. The first factor consists of biochar treatments: cogon grass biochar, rice husk biochar, and coconut shell biochar, while the second factor consisted of biofertilizer treatments, promi, Trichoderma, *Plant Growth-Promoting Rhizobacteria* (PGPR), and mycorrhizal. The observed parameters included microbial population, root infection, root length, fresh root weight, root dry weight, and ear weight with husk. The results showed that the application of biochar alone had a highly significant effect on sweet corn root dry weight and ear weight with husk, and a significant effect on root fresh weight and root infection. The application of biofertilizers alone had a highly significant effect on root length, root fresh weight, and ear weight with husk, and a significant effect on root dry weight. A highly significant interaction was observed between biochar and biofertilizer applications on ear weight with husk. The best treatment combination was rice husk biochar combined with Trichoderma biofertilizer applied at a rate of 20 g plant⁻¹.

Keywords: Biochar, Biofertilizers; nutrient for plant; Soil fertility; Nutrient uptake; Crop yield