ABSTRACT

Tomato (*Solanum lycopersicum* L.) is an annual fruit vegetable crop belonging to the family *Solanaceae* and has many benefits because it contains various vitamins, carbohydrates, fats, calories, and minerals required by the human body. Based on these data, tomato production experienced a decrease of approximately 55%**.** The decline in tomato production is caused by decreased land productivity due to nutrient deficiencies and suboptimal cultivation techniques. Efforts that can be made to increase tomato yield include improving cultivation techniques through the application of organic materials such as rice husk biochar and the application of PGPR derived from *Mimosa pudica* roots. This study aimed to examine the effect of husk charcoal and PGPR from *Mimosa pudica* roots, as well as the interaction between the two treatments, on the growth and yield of tomato plants. The research was conducted at the Experimental Garden and Agroecotechnology Laboratory, Faculty of Agriculture, Universitas Malikussaleh, from July to September 2025. The study employed a two-factor Randomized Block Design (RBD) with three replications. The first factor was husk charcoal (S) with three levels: S0 = 0 ton ha^{-1} (control), S1 = 5 tons ha^{-1} (1.2 kg $plot^{-1}$), and S2 = 10 tons ha^{-1} (2.4 kg $plot^{-1}$). The second factor was PGPR from *Mimosa pudica* roots (P) with three levels: P0 = 0 ml L^{-1}, P1 = 25 ml L^{-1}, and P2 = 35 ml L^{-1}. The results showed that the single application of husk charcoal and PGPR from *Mimosa pudica* roots had a highly significant effect on flowering age. The single application of husk charcoal had a significant effect on plant height, stem diameter, fruit shelf life, and root volume. The highest average values were obtained at the treatment level of S2 (10 tons ha^{-1}) and P2 (35 ml L^{-1}).

Keywords: Dosage, *Mimosa pudica*, fermentation, pests and diseases, variety Servo F1