

## ABSTRACT

Tomato (*Solanum lycopersicum* L.) is a horticultural plant that has many benefits for health, food industry and beauty. This research aims to determine the response of growth and yield of tomato plants to the application of SMS vermicompost and mycorrhiza and the interaction of the two. This research was conducted in the Tropical Garden of the Faculty of Agriculture, Malikussaleh University and in the Agroecotechnology Laboratory of the Faculty of Agriculture, Malikussaleh University. This research was conducted from June to August 2024. This research used factorial randomized block design (RBD). The first factor was SMS vermicompost which consisted of three levels: 0 g/polybag, 600 g/polybag, 1200 g/polybag. The second factor was mycorrhiza which consists of three levels: 0 g/polibag, 5 g/polibag, 10 g/polibag. There were 9 treatment combinations. Each treatment consisted of 3 replications, resulting in 27 experimental units. The results showed that vermicompost fertilizer treatment could improve tomato plant growth and production in terms of plant height at 21 and 42 days after planting, stem diameter at 35 days after planting, and leaf chlorophyll at 28 days after planting. The best results were obtained with a vermicompost fertilizer dose of 600 g/polybag. Mycorrhizal fungi treatment did not increase tomato plant growth and production in all observed variables. The use of a combination of vermicompost and arbuscular mycorrhizal fungi did not increase tomato plant growth and production in all observed variables.

Keywords: growth, infection, organic, worm.