ABSTRACT

Tomato (*Solanum lycopersicum* L.) is an important horticultural crop with high demand for fresh consumption and processing. Improving tomato growth and yield can be supported by organic fertilization, including goat urine liquid organic fertilizer and cattle manure. This study aimed to determine the effects of goat urine liquid organic fertilizer and cattle manure on tomato growth and yield and to determine the interaction between the two factors. The research was conducted at the Experimental Farm and Agricultural Laboratory of the Faculty of Agriculture, Universitas Malikussaleh, from May 2026 to Agustus 2026. This research employed a factorial Randomized Block Design with three replications was used. The first factor was goat urine liquid organic fertilizer at 0 ml/l water (K0), 200 ml/l water (K1), and 300 ml/l water (K2), while the second factor was cattle manure at 0 tons/ha (S0), 20 ton/ha (S1), 25 ton/ha (S2), and 30 ton/ha (S3). The experiment consisted of 12 treatment combinations, 36 experimental units, and 432 plants. Data were analyzed using analysis of variance followed by Duncan's Multiple Range Test at the 5% level when significant effects were detected. The results obtained from this study indicate that goat urine liquid organic fertilizer significantly affected plant height at 14 and 21 days after planting, flowering time, fruit diameter, and total soluble solids. Cattle manure had a highly significant effect on plant height at 14, 21, 28, 35, and 42 days after planting, stem diameter at 35 and 42 days after planting, and a significant effect on fruit diameter, fruit weight per plant, and total soluble solids. The interaction between goat urine liquid organic fertilizer and cattle manure was not significant for all observed parameters. The study concluded that goat urine liquid organic fertilizer and cattle manure affected several growth and yield parameters independently, while their combination did not produce a significant interaction. The application of 300 ml/L goat urine liquid organic fertilizer and 25–30 ton/ha cattle manure can be considered for tomato cultivation under conditions similar to this study.

Keywords: Cattle manure, Goat urine, Growth, Liquid organic fertilizer, Tomato.