

## ABSTRACT

Ultisol is a type of soil that has soil acidity problems in form  $\text{pH} < 5$  low macro nutrients and having very low P availability with base saturation  $< 35\%$ . Efforts to improve the Ultisol soil problem so that it can be used as agricultural land are by adding ameliorants and fertilizers. This study aims to assess the response of ameliorants and liquid compound fertilizers to the chemical properties of Ultisol soil, plant nutrient uptake of shallot plant growth. This research was conducted in the Experimental Garden of Malikussaleh University using polybags from February to April 2024. This study used a non-factorial complete randomized design consisting of three replications and there were 5 treatments each treatment consisted of 5 polybag units so that there were 75 units of experimental units. The parameters of soil chemical properties consist are  $\text{pH} (\text{H}_2\text{O})$ , N-Total, P-Available, K-dd, nutrient uptake of N, P, K plants. Field observation parameters consist are plant height, number of leaves and number of tillers at the age of 15, 30 and 45 Days After Planting (DAP). The results showed that the application of river sediment (98 g/polybag) + liquid compound fertilizer (10 ml/polybag) + NPK fertilizer (2 g/polybag) + crab shells (8 g/polybag) was able to improve the chemical properties of Ultisol soil, namely soil  $\text{pH} (\text{H}_2\text{O})$  (7.2), N-Total (0.36%), P-Available (13.25 mg/kg), K-Interchangeable (1.21 cmol/kg) and nutrient uptake of Nitrogen (1.51%), Phosphorus (0.43%) and Potassium plants (1.15%). The treatment of river sediment 98 g/polybag + liquid compound fertilizer 10 ml/polybag affects the growth of shallot plant height at the age of 30-45 DAP.

Keywords: crab shell, nutrient uptake, river sediment, soil fertility, ultisol soil