

ABSTRACT

High quality oil palm (*Elaeis guineensis* Jacq.) seedlings are essential for achieving optimal plantation productivity. One effort to improve seedling growth during the *Pre nursery* stage is the application of NPK fertilizer and tofu waste compost. This study aimed to determine the effects of NPK fertilizer, tofu waste compost, and their interaction on the growth of oil palm seedlings during the *Pre nursery* stage. The research was conducted from January to March 2026 in Paloh Lada Village, Dewantara District, North Aceh Regency, and at the Laboratory of the Faculty of Agriculture, Malikussaleh University. The experiment employed a factorial Randomized Complete Block Design (RCBD) consisting of two factors with three replications. The first factor was NPK fertilizer at three application rates: 0 g/polybag, 3 g/polybag, and 3.5 g/polybag. The second factor was tofu waste compost at three application rates: 0 g/polybag, 150 g/polybag, and 200 g/polybag. The observed parameters included plant height, leaf area, stem diameter, fresh plant weight, root length, root volume, and leaf chlorophyll content. The results showed that NPK fertilizer had significant to highly significant effects on plant height, leaf area, and stem diameter, but had no significant effect on fresh plant weight, root length, root volume, or leaf chlorophyll content. Tofu waste compost significantly affected plant height, leaf area at 90 days after planting (DAP), root volume, and leaf chlorophyll content at 90 DAP, but had no significant effect on stem diameter, fresh plant weight, or root length. The interaction between NPK fertilizer and tofu waste compost was significant only for leaf area at 60 DAP. In general, the application of 200 g/polybag of tofu waste compost produced better seedling growth, while the application of 3 g/polybag of NPK fertilizer resulted in better growth responses than 3.5 g/polybag during the *Pre nursery* stage.

Keywords: NPK fertilizer, oil palm, pre-nursery, seedling growth, tofu waste compost.