ABSTRACT

Oil palm (*Elaeis guineensis* Jacq.) is one of the important plantation commodities in Indonesia. The success of oil palm cultivation is influenced by the quality of seedlings, especially in the *pre-nursery phase*. One of the efforts to increase seed growth is the use of oil palm empty bunch ash (TKKS) as a source of nutrients and ameliorant ingredients as well as NPK fertilizers as a source of macronutrients. This study aims to determine the effect of the application of TKKS ash and NPK fertilizer and the interaction between the two on the growth of oil palm seedlings in the *pre-nursery phase*. The research was carried out from May to July 2026 in the experimental garden and laboratory of the Faculty of Agriculture, Malikussaleh University, North Aceh Regency. The study used a factorial Group Random Design (RAK) with two factors, namely TKKS ash with doses of 0, 45, and 65 g/polybag and NPK fertilizer with doses of 0, 2, and 4 g/polybag. Each combination of treatments was repeated three times so that 27 experimental units were obtained with a total of 108 plants. The parameters observed included plant height, leaf area, stem diameter, fresh plant weight, root length, root volume, and chlorophylll content. The results showed that the administration of TKKS ash at a dose of 65 g/polybag (A2) gave the best results on most growth parameters. The administration of NPK fertilizer at a dose of 4 g/polybag (N2) also gives the best results on several growth parameters. The interaction of TKKS ash and NPK fertilizer has a real to very real effect on several parameters. The combination of A2N2, namely 65 g/polybag TKKS ash and 4 g/polybag NPK fertilizer, gives the best results on plant height, leaf area, stem diameter, root length, and root volume. Thus, the combination of 65 g/polybag TKKS ash and 4 g/polybag NPK fertilizer is the best treatment to support the growth of oil palm seedlings in the *pre-nursery phase*.

Keywords: Amelioration, nutrient availability, biomass, root system, vegetative growth