ABSTRACT

Potato (Solanum tuberosum L.) is a major horticultural crop contributing to food security; however, its productivity often fluctuates due to limited soil nutrient availability. Improving potato yield can be achieved through the appropriate and balanced use of organic and inorganic fertilizers. This study aimed to evaluate the effects of horse manure and NPK fertilizer, as well as their interaction, on the growth and yield of potato plants. The study was conducted in Paya Dedep, Jagong Jeget District, Central Aceh Regency, Aceh Province, from June to August 2025. This study used a two-factor randomized block design with three replications. The first factor was horse manure 0, 20, and 40 tons/ha, while the second factor was NPK fertilizer 0, 400, and 800 kg/ha. Observed variables included plant height, number of leaves, number of shoots, number of tubers per plant and per plot, tuber weight per plant and per plot, and tuber grade. The results indicated that horse manure significantly increased the number of tubers per plot, with the best treatment at 20 tons/ha. NPK fertilizer significantly affected plant height at 14–56 days after planting, number of leaves at 28–56 days after planting, number of tubers per plant, and number of tubers per plot, with the best treatmen at 800 kg/ha. The interactiotn between horse manure and NPK fertilizer affected plant height at 42–56 days after sowing and tuber weight per plant. The best treatment was a dose of 40 metric tons/ha of horse manure + 800 kg/ha of NPK. This treatment produced the highest number and heaviest weight of potato tubers, resulting in the highest yield of Grade A potatoes compared to the other treatments.

Keywords: potato, horse, NPK, growth, yield