

**THE EFFECT OF ORGANIC FERTILIZER AND NPK FERTILIZER
ON FERTILIZATION EFFICIENCY, GROWTH, AND YIELD
EDAMAME SOYBEANS (*Glycine max* L. Merrill)**

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ABSTRACT

NPK fertilizer, commonly used in modern agriculture to enhance soil nutrient content for plants, can lead to reduced soil productivity, crop yield, and environmental damage if excessively applied. To improve its efficiency, integrated plant nutrient management systems are necessary, focusing on balanced fertilizers that minimize inorganic fertilizer use (N, P, and K) and maximize organic fertilizers. This study aimed to investigate the impact of the interaction between organic fertilizer types and NPK fertilizer on the efficiency of NPK utilization and the growth and yield of edamame soybeans. This research was carried out in Ciamis Regency from February to April 2023, at an altitude of 875 meters above sea level. The study was arranged in a factorial pattern in a randomized block design with two treatment factors: initially, three different types of organic fertilizers (petroganic, local, and faecal sludge organic fertilizers), and second, four doses of inorganic fertilizers (NPK) (0 kg/ha, 75 kg/ha, 150 kg/ha, and 225 kg/ha). Each treatment is repeated three times. The study found an interaction effect between NPK fertilizer dosage and the type of organic fertilizer on plant height at 45 days after planting, plant height rate at 45–60 days after planting, and leaf area index at 15 days after planting. Conversely, there was no interaction with other parameters. Independently, the value of NPK fertilizer application efficiency, growth, and yield of edamame soybeans differ depending on the type of organic fertilizer. Petroganic organic fertilizer type has the highest efficiency in the application of NPK fertilizer at 75 kg/ha (31.48 kg edamame/kg NPK). The highest efficiency type of local organic fertilizer in the application of NPK fertilizer is 150 kg/ha (6.83 kg edamame/kg NPK), and the type of faecal sludge fertilizer has the highest efficiency in the application of NPK fertilizer at 75 kg/ha (25.22 kg edamame/kg NPK).

Keywords: organic fertilizer, NPK fertilizer, efficiency, growth, yield, edamame soybeans.