

Pengaruh Pupuk NPK Dan Pengaturan Jarak Tanam Terhadap Produksi Dan Mutu Benih Kacang Panjang (*Vigna sinensis* L.)

Kode KP 22.

*(The Effect of NPK Fertilizer and Plant Spacing on the Production and Quality of Long Bean Seeds (*Vigna sinensis* L.)*

Code KP 22

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ABSTRACT

*Long bean (*Vigna sinensis* L.) is a horticultural commodity with increasing economic value and market demand, yet the availability of quality seeds remains limited due to suboptimal cultivation techniques, particularly in determining the appropriate dose of NPK fertilizer and plant spacing. This study aimed to determine the effect of NPK fertilizer, plant spacing, and their interaction on the production and quality of long bean seeds of the KP 22 variety. The research was conducted from August to November 2025 in Curah Buntu Hamlet, Jenggawah Village, Jember Regency, as well as at the Laboratory and Greenhouse of the Seed Production Technique Study Program, Politeknik Negeri Jember. The experiment used a Factorial Randomized Block Design (RBD) with two treatment factors: NPK 16-16-16 fertilizer dose (250 kg/ha, 275 kg/ha, and 300 kg/ha) and plant spacing (50 cm × 50 cm, 50 cm × 60 cm, and 60 cm × 60 cm), each replicated three times. Data were analyzed using ANOVA followed by DMRT at the 5% level. The results showed that an NPK dose of 300 kg/ha (N3) produced the highest seed weight per plot (683.25 g) and the highest seed production per hectare (1,310.14 kg/ha). A plant spacing of 60 cm × 60 cm (J3) produced the highest seed production per hectare (1,358.44 kg/ha), while the combination of N3J2 (300 kg/ha with 50 cm × 60 cm spacing) produced the highest number of pods per plant (26.50 pods) and the highest seed weight per plant (55.17 g). The interaction between NPK fertilizer and plant spacing significantly affected seed quality, with the N1J3 combination producing the highest germination rate (93.56%) and the N3J3 combination producing the highest growth uniformity (89.56%), both of which met the horticultural seed certification standard ($\geq 85\%$).*

Keywords: Long Bean, NPK Fertilizer, Plant Spacing, Seed Production, Seed Quality