

Aplikasi Pupuk NPK dan Konsentrasi Hormon GA₃ terhadap Produksi dan Mutu Benih Kacang Panjang (*Vigna sinensis* L.) KP-22 (Application of NPK Fertilizer and Gibberellin (GA₃) Concentration on Seed Production and Quality of Long Bean (*Vigna sinensis* L.) KP-22)) Supervised by: **Dr.Ir Rahmat Ali Syaban, M. Si**

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ABSTRACT

*Long beans (*Vigna sinensis* L.) are one of the important horticultural commodities widely consumed by Indonesian people, so the availability of superior seeds is a major factor in supporting productivity. This study aims to determine the effect of NPK fertilizer doses and gibberellin hormone (GA₃) concentrations on the production and quality of long bean seeds, as well as their interaction. The study was conducted at the Jember State Polytechnic field from July to October 2025 using a factorial Randomized Block Design (RAK) with two factors, namely NPK fertilizer doses consisting of three levels: 250 kg/ha (P1), 300 kg/ha (P2), and 350 kg/ha (P3), and GA₃ concentrations consisting of three levels: 100 ppm (G1), 150 ppm (G2), and 200 ppm (G3), resulting in 9 treatment combinations with 3 replications totaling 27 experimental units. Data were analyzed using ANOVA followed by Duncan's Multiple Range Test (DMRT) at the 5% level.*

The results showed that a dose of 250 kg/ha of NPK fertilizer significantly affected flowering time, while a concentration of 200 ppm GA₃ significantly affected flowering time. The fastest flowering time was achieved with the combination of 250 kg/ha of NPK and 200 ppm GA₃ (P1G3), at 31.3 days after planting (DAP). The interaction between NPK and GA₃ significantly affected the number of pods per plot, seed weight per plot, and seed production per hectare. The best treatment combination was P1G3, which produced 139 pods per plot, 418.33 grams of seed weight per plot, and 1,154 kg/ha of seed production per hectare. Meanwhile, the

parameters of number of pods per plant, seed weight per plant, 1000-grain weight, germination rate, growth rate, and growth synchrony showed no significant differences across treatments. Applying high doses of NPK and GA₃ fertilizer can provide sufficient nitrogen, phosphorus, and potassium and stimulate plant generative growth, thus supporting flower formation, fruiting, and optimal seed filling. Therefore, a combination of 250 kg/ha of NPK fertilizer and 200 ppm of GA₃ is recommended as the best treatment for increasing seed production of long beans (code KP-22).

Keywords: *long beans, NPK fertilizer, gibberellin (GA₃), seed production, seed quality*