

**OPTIMIZATION OF SINGLE AND COMPOUND NPK FERTILIZER
REGIMENS FOR THE GROWTH AND YIELD OF EDAMAME (*Glycine*
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ABSTRACT

The use of inappropriate fertilizer types and rates on edamame plants results in suboptimal productivity. This experiment aims to examine the effect of applying single-component and compound fertilizer treatments on edamame plants. The study was conducted from September to December 2025 at the Jember State Polytechnic experimental farm. The experimental design used a non-factorial RAK consisting of 9 treatment levels. The treatments were as follows: P1—100% of the NPK 15-10-12 fertilizer dose (200 kg/ha), urea (250 kg/ha), ZA (150 kg/ha), MgSO₄ (1 kg/ha), and MKP (2 kg/ha); P2—100% of the urea dose (200 kg/ha), ZA (300 kg/ha), TSP (150 kg/ha), KCl (100 kg/ha), P3: 100% dose of NPK 15-10-12 fertilizer (350 kg/ha), 1 kg/ha of NP 12-60, P4: 100% dose of NPK 15-10-12 fertilizer (200 kg/ha), Urea (250 kg/ha), ZA (150 kg/ha), MgSO₄ (1 kg/ha), MKP (2 kg/ha) + biostimulant, P5: 100% dose of NPK 15-10-12 fertilizer (200 kg/ha), ZA (300 kg/ha), TSP (150 kg/ha), KCl (100 kg/ha) + biostimulant, P6: 100% of the NPK 15-10-12 fertilizer dose (350 kg/ha), 1 kg/ha of NP 12-60 + biostimulant, P7: NPK 15-10-12 fertilizer (100 kg/ha), urea (125 kg/ha), ZA (75 kg/ha), MgSO₄ (0.9 kg/ha), MKP (1.89 kg/ha) + biostimulant, P8: urea (100 kg/ha), ZA (150 kg/ha), TSP (75 kg/ha), KCl (50 kg/ha) + biostimulant, P9: NPK 15-10-12 fertilizer (175 kg/ha), 1 kg/ha NP 12-60 + biostimulant. The results of the study showed that treatments involving single and compound NPK fertilizers combined with biostimulants were able to improve both the quantity and quality of pods, as measured by the variables of total pod weight (53.52 grams) and the number of pods containing 2 and 3 seeds (12.78).

Keywords: *Dosage, Edamame, Pods, Production, Fertilizer*