

**ANALISIS KINERJA MESIN TANAM BIBIT PADI TIPE DORONG  
BERDASARKAN VARIASI KERAPATAN BENIH  
PADA SISTEM PERSEMAIAN DAPOG**

**INTISARI**

**Oleh:**

**Muhammad Rizqi Saputra**

**21/476961/TP/13140**

Kinerja operasional mesin tanam bibit padi tipe dorong sangat dipengaruhi oleh kualitas fisiologis dan keseragaman bibit yang dihasilkan pada tahap persemaian. Berat benih per tray memiliki peran penting dalam menentukan kerapatan bibit, vigor, serta kekompakan mat semai yang berimplikasi langsung terhadap efisiensi penanaman dan kestabilan kerja mesin. Penelitian ini bertujuan mengevaluasi pengaruh variasi berat benih pada sistem semai dapog terhadap efisiensi penanaman mesin tanam bibit padi tipe dorong. Tiga perlakuan berat benih—130 g, 175 g, dan 220 g—diuji menggunakan analisis ANOVA satu arah untuk menilai apakah terdapat perbedaan signifikan dalam efisiensi penanaman, khususnya berdasarkan parameter waktu hilang selama operasi lapang. Hasil analisis menunjukkan adanya perbedaan yang signifikan antartingkat perlakuan, dengan uji statistik menegaskan bahwa berat benih berpengaruh nyata terhadap efisiensi penanaman ( $F = 7,04$ ;  $P = 0,026 < 0,05$ ;  $F_{crit} = 5,14$ ). Temuan ini menunjukkan bahwa variasi berat benih dalam rentang yang diuji mampu memengaruhi efektivitas proses transplanting, di mana berat benih yang sesuai dapat menghasilkan mat semai yang lebih seragam dan memperlancar proses penyuaian bibit oleh mesin, sehingga mengurangi gangguan penanaman. Penelitian lanjutan dengan ukuran sampel lebih besar, penambahan parameter kualitas bibit, serta kondisi lapang yang lebih beragam direkomendasikan untuk menyempurnakan rekomendasi berat benih pada sistem mekanisasi tanam padi.

**Kata kunci:** Berat benih; Sistem semai dapog; Efisiensi penanaman; Mesin tanam bibit padi tipe dorong; ANOVA; Mekanisasi pertanian.

**Pembimbing:** 1. Sri Markumingsih, S.T.P., M.Sc., Ph.D

2. Dr. Ir. Radi, S.T.P., M.Eng., IPU, ASEAN Eng., APEC Eng

**PERFORMANCE ANALYSIS OF WALKING-RICETRANPLANTER  
BASED ON SEED DENSITY VARIATIONS  
IN DAPOG SEEDING SYSTEM**

**ABSTRACT**

**By:**

**Muhammad Rizqi Saputra**

**21/476961/TP/13140**

The operational performance of rice transplanters is strongly influenced by the physiological quality and uniformity of seedlings prepared during the nursery phase. Seed weight per tray plays a critical role in determining seedling density, vigor, and mat compactness, factors that directly affect planting efficiency and mechanical planting stability. This study aimed to evaluate the effect of different seed weights in a dapog nursery system on the planting efficiency of a rice transplanter. Three seed-weight treatments—130 g, 175 g, and 220 g—were tested using a one-way ANOVA to determine whether variations in seed weight resulted in statistically significant differences in planting efficiency, particularly measured through time loss during field operations. The analysis revealed significant differences among treatments, with the statistical test indicating that seed weight had a significant effect on planting efficiency ( $F = 7.04$ ;  $P = 0.026 < 0.05$ ;  $F_{crit} = 5.14$ ). These results demonstrate that seed weight within the tested range influences the effectiveness of mechanical transplanting, where appropriate seed weight contributes to more uniform seedling mats and smoother machine feeding, ultimately reducing planting disturbances. Further research incorporating larger sample sizes, detailed seedling-quality parameters, and varied field conditions is recommended to refine seed weight recommendations for optimized mechanized rice cultivation.

**Keywords:** Seed weight; Dapog nursery system; Planting efficiency; Rice transplanter; ANOVA; Agricultural mechanization.

**Mentors:** 1. Sri Markumningsih, S.T.P., M.Sc., Ph.D

2. Dr. Ir. Radi, S.T.P., M.Eng., IPU, ASEAN Eng., APEC Eng