

MODIFIKASI ALAT TANAM BIBIT TOMAT
(*Lycopersicum esculentum* Mill) SEMI MEKANIS



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MODIFIKASI ALAT TANAM BIBIT TOMAT (*Lycopersicum esculentum* Mill) SEMI MEKANIS

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ABSTRAK

Selama ini penanaman bibit tomat di Sungai Puar masih dilakukan secara manual, sehingga membutuhkan waktu yang lebih lama, tenaga lebih besar, serta menimbulkan keluhan fisik pada petani akibat posisi kerja yang kurang ergonomis. Penelitian ini bertujuan untuk memodifikasi alat tanam bibit tomat semi mekanis yang efisien dan ergonomis serta menganalisis aspek teknis, energi, dan ekonomis alat pada lahan siap tanam. Metode penelitian yang digunakan adalah metode eksperimen. Parameter pengujian meliputi kedalaman lubang tanam, kecepatan proses menanam, kapasitas kerja efektif, kapasitas kerja teoritis, efisiensi, pertumbuhan tanaman, daya operator, dan analisis ekonomi. Hasil penelitian menunjukkan bahwa alat tanam bibit tomat semi mekanis menghasilkan kedalaman lubang rata-rata 9,16 cm, kecepatan penanaman 0,0769 m/s, kapasitas kerja efektif 0,0110 ha/jam, kapasitas kerja teoritis 0,0138 ha/jam, dan efisiensi sebesar 79,39%. Penggunaan alat juga mampu menurunkan daya operator menjadi 63,53 watt dibandingkan penanaman manual sebesar 74,09 watt, serta meningkatkan persentase tanaman hidup hingga 100%. Kebaruan penelitian ini terletak pada modifikasi alat yang dilengkapi satu pegangan, wadah bibit, dan pembatas kedalaman tanam sehingga proses penanaman menjadi lebih praktis dan ergonomis. Penelitian lanjutan disarankan untuk mengembangkan alat dengan sistem kerja otomatis pada berbagai kondisi tanah dan komoditas hortikultura lainnya.

Kata Kunci: alat tanam; efisiensi; ergonomis; semi mekanis; tomat

MODIFICATION OF SEMI-MECHANICAL TOMATO (*Lycopersicum esculentum* Mill) SEEDLING PLANTING TOOLS

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ABSTRACT

So far, planting tomato seedlings in Sungai Puar has been done manually, so it takes more time, requires more energy, and causes physical complaints among farmers due to less ergonomic working positions. This research was motivated by the tomato seedling planting process which is still carried out manually, resulting in longer working time, greater labor requirements, and physical complaints experienced by farmers due to less ergonomic working positions. This study aimed to modify a semi-mechanical tomato seedling planter that is efficient and ergonomic, as well as to analyze its technical, energy, and economic aspects on prepared planting land. The research method used was an experimental method. The testing parameters included planting hole depth, planting speed, effective field capacity, theoretical field capacity, efficiency, plant growth, operator power, and economic analysis. The results showed that the semi-mechanical tomato seedling planter produced an average planting hole depth of 9.16 cm, a planting speed of 0.0769 m/s, an effective field capacity of 0.0110 ha/h, a theoretical field capacity of 0.0138 ha/h, and an efficiency of 79.39%. The use of the tool was also able to reduce operator power to 63.53 watts compared to manual planting at 74.09 watts, while increasing the plant survival rate up to 100%. The novelty of this research lies in the modification of the planter equipped with a single handle, seedling container, and planting depth limiter, making the planting process more practical and ergonomic. Further research is recommended to develop the tool for various soil conditions and other horticultural commodities.

Keywords: efficiency; ergonomics; planting tool; semi-mechanical; tomato

