

ABSTRACT

ANALYSIS OF *BIODEGRADABLE* POT CHARACTERISTICS MADE FROM KEPOK BANANA STEM (*Musa paradisiaca* L.) AND RICE STRAW (*Oryza sativa* L.) BIOMASS WASTE FOR CHILI PEPPER PLANTS (*Capsicum frutescens* L.)

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This study developed *biodegradable* pots from banana sheath and rice straw waste as an eco-friendly alternative to plastic *polybags* that cause root damage during transplanting and environmental pollution. The pots were made using biocomposite method with fibers from both waste materials as fillers and tapioca starch as binder with concentration variations of 22%, 30%, and 38%. A total of 24 samples from 6 treatments were tested for their characteristics including density, integrity, water absorption, and planting tests on chili pepper seedlings. Results showed that banana sheath pots had high density (0.98-1.57 g/cm³) which exceeded SNI 03-2105-2006 standards and 99.47% integrity but low water absorption (99.03%), while rice straw pots had lower density (0.71-0.8 g/cm³) within SNI standard range, 99.22% integrity, and high water absorption (272.32%). Increasing binding content improved density and integrity but reduced water absorption. Planting tests proved that both pots effectively supported chili pepper growth because they can decompose naturally without disturbing the root system. The optimal composition was 78% filler and 22% tapioca binder ratio, which provided the best balance for plant growth while converting biomass waste into value-added products supporting sustainable agriculture.

Keywords: *biodegradable* pots, biomass waste, transplanting, density.

ABSTRAK

ANALISIS KARAKTERISTIK POT *BIODEGRADABLE* BERBAHAN LIMBAH BIOMASSA PELEPAH PISANG KEPOK (*Musa paradisiaca* L.) DAN JERAMI PADI (*Oryza sativa* L.) UNTUK TANAMAN CABAI RAWIT (*Capsicum frutescens* L.)

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Penelitian ini mengembangkan pot *biodegradable* dari limbah pelepah pisang kepok dan jerami padi sebagai alternatif ramah lingkungan pengganti *polybag* plastik yang menimbulkan kerusakan akar saat transplantasi dan pencemaran lingkungan. Pot dibuat menggunakan metode biokomposit dengan serat kedua limbah sebagai pengisi dan tepung tapioka sebagai perekat dengan variasi konsentrasi 22%, 30%, dan 38%. Sebanyak 24 sampel dari 6 perlakuan diuji karakteristiknya meliputi kerapatan, keutuhan, daya serap air, dan uji tanam pada bibit cabai rawit. Hasil menunjukkan pot pelepah pisang kepok memiliki kerapatan tinggi (0,98-1,57 g/cm³) nilai ini berada di atas SNI 03 2105 2006 dan keutuhan 99,47% namun daya serap air rendah (99,03%), sedangkan pot jerami padi memiliki kerapatan lebih rendah (0,71-0,8 g/cm³) berada dalam range standar SNI, keutuhan 99,22%, dan daya serap air tinggi (272,32%). Peningkatan kadar perekat meningkatkan kerapatan dan keutuhan tetapi menurunkan daya serap air. Uji tanam membuktikan kedua pot efektif mendukung pertumbuhan cabai rawit karena dapat terurai alami tanpa mengganggu sistem perakaran. Komposisi optimal adalah rasio pengisi 78% dan perekat tapioka 22% yang memberikan keseimbangan terbaik untuk pertumbuhan tanaman, sekaligus mengubah limbah biomassa menjadi produk bernilai tambah mendukung pertanian berkelanjutan.

Kata kunci: pot *biodegradable*, limbah biomassa, transplantasi, kerapatan.