PEMANFAATAN LIMBAH PERTANIAN KULIT KOPI DAN KELOBOT JAGUNG UNTUK PENGEMBANGAN *BIODEGRADABLE PAPER* DENGAN VARIASI KONSENTRASI POLIVINIL ALKOHOL UNTUK MENDUKUNG AGROINDUSTRI BERKELANJUTAN

INTISARI

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Penggunaan kemasan plastik yang berlebihan dan praktik pengelolaan sumber daya alam yang tidak berkelanjutan akibat produksi kertas mendorong pencarian alternatif kemasan ramah lingkungan. Biodegradable paper menjadi solusi potensial. Limbah pertanian dengan kandungan selulosa tinggi, seperti kulit kopi dan kelobot jagung, dapat menjadi sumber alternatif. Penelitian ini bertujuan mengembangkan biodegradable paper dari limbah kopi dan kelobot jagung serta mengetahui karakteristik dan variasi terbaiknya. Penelitian ini menguji 10 variasi komposisi perbandingan persentase pencampuran (% b/b) dari kulit kopi, kelobot jagung, dan polivinil alkohol (PVA). Hasilnya menunjukkan bahwa variasi B, C, D, G, H, dan I berhasil menghasilkan biodegradable paper dengan karakteristik gramatur (38,08–129,39g/m^2), bulk (3,36–5,40cm^3/g), kadar air (4,80–8,72%), derajat putih (44,86–60,99%ISO), ketahanan tarik (0,04–0,30kN/m), daya regang (0,98–2,20%), kekakuan (2,80–13,92mN.m), dan derajat degradasi (37,81–59,27%) dalam 28 hari dengan metode soil burial test. Prediksi biodegradable paper terdegradasi sempurna adalah 43,72-97,79 hari. Variasi D dengan komposisi 25% kulit kopi, 75% kelobot jagung, dan 5% PVA memiliki karakteristik terbaik. Namun, beberapa parameter belum memenuhi standar baku mutu sehingga diperlukan pengembangan lanjutan. Temuan ini menunjukkan bahwa limbah kopi dan kelobot jagung berpotensi untuk mengembangkan biodegradable paper dari biomassa pertanian, mengurangi penggunaan plastik, mengatasi deforestasi, dan meningkatkan nilai tambah limbah pertanian. Penelitian ini memberikan wawasan berharga untuk menciptakan biodegradable paper sebagai bioproduk bernilai tambah dengan potensi pengembangan pertanian berkelanjutan.

Kata kunci: *Biodegradable paper*, limbah pertanian, pulp kertas, selulosa, kopi, jagung, bioproduk nilai tambah, ramah lingkungan, berkelanjutan,

AGRICULTURAL WASTE VALORIZATION FROM COFFEE AND CORN HUSK FOR DEVELOPING BIODEGRADABLE PAPER WITH VARYING CONCENTRATIONS OF POLYVINYL ALCOHOL TO SUPPORT SUSTAINABLE AGROINDUSTRY

ABSTRACT

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The excessive use of plastic packaging and unsustainable natural resource management due to paper production have driven the search for eco-friendly packaging alternatives. Biodegradable paper presents a potential solution. Agricultural waste with high cellulose content, such as coffee husks and corn husks, can serve as alternative sources. This study aims to develop biodegradable paper from coffee husks and corn husks and determine the best characteristics and variations. This research tested 10 variations of composition ratios (% w/w) of coffee husks, corn husks, and polyvinyl alcohol (PVA). The results show that variations B, C, D, G, H, and I successfully produced biodegradable paper with characteristics including grammage (38.08–129.39g/m^2), bulk (3.36–5.40cm^3/g), moisture content (4.80–8.72%), whiteness degree (44.86–60.99%ISO), tensile strength (0.04–0.30kN/m), elongation (0.98–2.20%), stiffness (2.80–13.92mN.m), and degradation degree (37.81–59.27%) within 28 days using the soil burial test method. The predicted complete degradation time for the biodegradable paper is 43.72-97.79 days. Variation D, composed of 25% coffee husks, 75% corn husks, and 5% PVA, exhibited the best characteristics. However, several parameters did not meet the quality standards, necessitating further development. These findings demonstrate that coffee husks and corn husks have the potential to be utilized for developing biodegradable paper from agricultural biomass, reducing plastic usage, combating deforestation, and enhancing the value of agricultural waste. This study provides valuable insights into creating biodegradable paper as a high-value bioproduct with potential for sustainable agricultural development.

Keywords: Biodegradable paper, agricultural waste, paper pulp, cellulose, coffee, corn, value added bioproduct, environmentally friendly, sustainable,