

ABSTRAK

PEMBUATAN BIOPLASTIK BERBASIS PATI GANYONG (*Canna edulis kerr*) DENGAN VARIASI KONSENTRASI SELULOSA RUNJUNG PINUS (*Pinus merkusii*) DAN SORBITOL UNTUK APLIKASI *BIOPOLYBAG*

Agni Pratista Dewi, 51 Halaman, 7 Tabel, 20 Gambar, 4 Lampiran

Bioplastik merupakan salah satu alternatif pengganti plastik konvensional yang lebih ramah lingkungan karena berasal dari bahan yang dapat diperbarui dan memiliki kemampuan terdegradasi di lingkungan. Penelitian ini bertujuan untuk menentukan variasi konsentrasi selulosa runjung pinus (*Pinus merkusii*) dan sorbitol terbaik dalam pembuatan bioplastik berbasis pati ganyong (*Canna edulis kerr*), menentukan karakteristik bioplastik yang dihasilkan, serta mengaplikasikannya sebagai *biopolybag*. Bioplastik dibuat menggunakan pati ganyong 5 g, CMC 1 g, asam asetat 2% sebanyak 2 ml, dan air 100 ml dengan variasi konsentrasi selulosa runjung pinus 2%, 4%, 6%, 8%, dan 10% serta sorbitol 20% dan 40%. Berdasarkan hasil pengujian, variasi terbaik diperoleh pada kombinasi konsentrasi selulosa runjung pinus 4% dan sorbitol 20%. Variasi tersebut menghasilkan kuat tarik sebesar 6,812 MPa, elongasi sebesar 3%, daya serap air sebesar 39,20%, biodegradasi sebesar 60,83%, dan ketebalan sebesar 0,18 mm. Bioplastik pada variasi tersebut berhasil diaplikasikan menjadi *biopolybag* menggunakan metode *heat sealing*. Karakterisasi bioplastik dilakukan melalui pengujian kuat tarik, elongasi, daya serap air, biodegradasi, dan ketebalan dengan mengacu pada SNI 7188.7:2016 dan JIS Z 1707.

Kata kunci: bioplastik, pati ganyong, selulosa runjung pinus, sorbitol, *biopolybag*.

ABSTRACT

PRODUCTION OF BIOPLASTIC BASED ON CANNA STARCH (Canna edulis Kerr) WITH VARIATIONS IN PINE CONE CELLULOSE (Pinus merkusii) AND SORBITOL CONCENTRATIONS FOR BIOPOLYBAG APPLICATION

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Bioplastics are an environmentally friendly alternative to conventional plastics because they are derived from renewable resources and possess the ability to biodegrade in the environment. This study aimed to determine the optimum concentration variation of pine cone cellulose (Pinus merkusii) and sorbitol in the production of canna starch (Canna edulis kerr)-based bioplastics, to determine the characteristics of the resulting bioplastics, and to apply them as biopolybags. The bioplastics were prepared using 5 g of canna starch, 1 g of CMC, 2 mL of 2% acetic acid, and 100 mL of water, with cellulose concentration variations of 2%, 4%, 6%, 8%, and 10%, and sorbitol concentrations of 20% and 40%. Based on the test results, the best variation was obtained from the 4% pine cone cellulose and 20% sorbitol. This variation exhibited a tensile strength of 6.812 MPa, elongation of 3%, water absorption of 39.20%, biodegradation of 60.83%, and thickness of 0.18 mm. The bioplastic from this variation was successfully applied as a biopolybag using the heat sealing method. Bioplastic characterization was conducted through tensile strength, elongation, water absorption, biodegradation, and thickness tests with reference to SNI 7188.7:2016 and JIS Z 1707 standards.

Keywords: *bioplastic, canna starch, pine cone cellulose, sorbitol, biopolybag.*