ABSTRACT

CHARACTERISTICS OF BIODEGRADABLE FILM BASED ON SUGARCANE BAGASSE (*Saccharum officinarum L*) WITH ADDITION OF GLYCEROL and *Carboxy Methyl Cellulose* (CMC)

By

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Bagasse contains cellulose which can be used as raw material in manufacture in biodegradable films. The perpose of this research were to know the effect of glycerol, CMC, and their interactions on the characteristics of biodegdable films from sugarcane bagasse. This research was arranged by RAKL with three replications. This study used two factors, the first factor was CMC concentration 2%, 3%, and 4%. The second factor was glycerol concentration 0.5%, 1% and 1.5%. Sugarcane bagasse was pulped and filtered and then immersed with NaOH 2.5% and hydrolyzed using H_2O_2 2%, it was then mixed with various concentration of ingredient. The data of tensile strength, thickness, and percent elongation were biodegradable film analyzed by analysis of variance. Then tested with Orthogonal Polynomials at the level of 1% and 5%. The results of this study showed that concentration of glycerol, and CMC had interactions and had a

significant effect on the tensile strength, thickness, and percent elongation of biodegradable film. The best results were obtained at 2% CMC concentrations and 1% glycerol which resulted in tensile strength values of 11.716 Mpa, thickness of 0.341 mm, percent elongation of 26.437%, and water vapor transmission rate of 7.55 g / m2 / day. The biodegradable film on 14 days by biodegradability test.

Keywords : Biodegradable Film, Cellulose, Surgarcane Bagasse, Glycerol and CMC.

ABSTRAK

KARAKTERISTIK *BIODEGRADABLE FILM* BERBASIS AMPAS TEBU *(Saccharum officinarum L)* DENGAN PENAMBAHAN GLISEROL DAN *Carboxy Methyl Cellulose* (CMC)

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Ampas tebu mengandung selulosa yang dapat dijadikan bahan baku dalam pembuatan *biodegradable film*. Penelitian ini bertujuan mengetahui pengaruh gliserol, CMC, dan interaksi keduanya terhadap karakteristik *biodegdable film* dari ampas tebu. Penelitian ini disusun dalam. Rancangan Acak Kelompok Lengkap (RAKL) dengan tiga kali ulangan. Penelitian ini menggunakan dua faktor, faktor pertama konsentrasi CMC 2%, 3%, dan 4%. Faktor kedua konsentrasi gliserol 0,5%, 1%, dan 1,5%. Ampas tebu di haluskan dan disaring kemudian dilakukan perendaman dengan NaOH 2,5% dan dihidrolisis menggunakan H_2O_2 2%, setelah itu dilakukan pencampuran bahan sesuai dengan konsentrasi yang ditentukan. Data diolah dengan Analisis ragam, kemudian di uji dengan Ortogonal Polinomial pada taraf 1% dan 5%. Hasil dari penelitian

menunjukkan bahwa konsentrasi gliserol dan CMC ada interaksi, kemudian berpengaruh nyata terhadap kuat tarik, Ketebalan, dan persen pemanjangan *biodegradable film*. Hasil terbaik diperoleh pada konsentrasi CMC 2% dan gliserol 1% yang menghasilkan nilai kuat tarik sebesar 11,716 Mpa, ketebalan sebesar 0,341 mm, persen pemanjangan sebesar 26,437 %, dan laju transmisi uap air sebesar 7,55 g/m^2/hari. *Biodegradable film* terurai selama 14 hari dengan uji biodegradabilitas.

Kata Kunci: *Biodegradable Film,* selulosa, ampas tebu, Gliserol dan CMC.