ABSTRACT

THE EFFECT OF GLYCEROL AND CMC (*Carboxy Methyl Cellulose*) CONCENTRATION ON CHARACTERISTICS OF *BIODEGRADABLE FILM* FROM YOUNG COCONUT FIBER

By

IRFAN PERMADI

Biodegradable film is one alternative to substitubte conventional plastic which is difficult to decompose. *Biodegradable film* can be made from natural resources such as cellulose. Young coconut fiber contains 32.5% of cellulose. The aim of the study was to determine the effect of the addition of glycerol and CMC (*Carboxy Methyl Cellulose*) and their interactions on the characteristics of *biodegradable film* from young coconut fiber. This research was arranged in a Complete Randomized Block Design with two factors and three replications. The first factor is the addition of glycerol with a concentration of 0.5% (G1); 1% (G2); 1.5% (G3), and the second factor is the addition of CMC with a concentration of 1% (C1); 2% (C2); 3% (C3). Data were analyzed using ANOVA to determine the effect between treatments and the data were analyzed further using Honestly Significance Diffirence (HSD) at the level of 5%. The results showed that there was an interaction between glycerol and CMC in producing *biodegradable film*. *Biodegradable film* with the best treatment is in the formulation of G1C2 (Glycerol 0.5% and CMC 2%) with tensile strength of 12,173 MPa, thickness

value of 0,269 mm, elongation value of 28,977%, moisture transmission value of 28,569 gr / (m^2/day) and biodegradability for 14 days.

Keywords: Cellulose, Glycerol, CMC (*Carboxy Methyl Cellulose*), WVTR, *Biodegradble Film*

ABSTRAK

PENGARUH KONSENTRASI GLISEROL DAN CMC (*Carboxy Methyl Cellulose*) TERHADAP KARAKTERISTIK *BIODEGRADABLE FILM* DARI SABUT KELAPA MUDA

Oleh

IRFAN PERMADI

Biodegradable film menjadi salah satu alternatif pengganti plastik konvensional yang sulit terurai. *Biodegradable film* dapat dibuat dari sumber daya alam seperti selulosa. Sabut kelapa muda mengandung selulosa sebesar 32,5%. Tujuan penelitian adalah mengetahui pengaruh penambahan gliserol dan CMC (*Carboxy Methyl Cellulose*) serta interaksi keduanya terhadap karakteristik *biodegradable film* dari sabut kelapa muda. Penelitian ini disusun dalam Rancangan Acak Kelompok Lengkap (RAKL) dengan 2 faktor dan tiga ulangan. Faktor pertama yaitu penambahan gliserol dengan konsentrasi 0.5% (G1); 1% (G2); 1.5% (G3), dan faktor kedua yaitu penambahan CMC dengan konsentrasi 1% (C1); 2% (C2); 3% (C3). Data dianalisis sidik ragam untuk mengetahui pengaruh antar perlakuan dan data dianalisis lebih lanjut dengan Uji Beda Nyata Jujur (BNJ) pada taraf 5%. Hasil penelitian menunjukkan terdapat interaksi antara gliserol dan CMC dalam menghasilkan *biodegradable film*. *Biodegradable film* dengan perlakuan terbaik yaitu pada formulasi G1C2 (Gliserol 0,5% dan CMC 2%) dengan nilai kuat tarik sebesar 12,173 MPa, nilai ketebalan sebesar 0,269 mm, nilai elongasi sebesar

28,977%, nilai transmisi uap air sebesar 28,569 gr/(m^2/hari) dan biodegradabilitas selama 14 hari.

Kata kunci: Selulosa, Gliserol, CMC (*Carboxy Methyl Cellulose*), WVTR, *Biodegradble Film*