

## **ABSTRACT**

### **CHARACTERISTICS OF BIODEGRADABLE FILMS BASED ON PETIOLE CELLULOSE OF BANANA (*Musa paradisiaca*) WITH GLYCEROL AND CARBOXY METHYL CELLULOSE (CMC) ADDITION**

**By**

**CITRAALIFIANI**

Biodegradable film is a film that can be recycled and can be degraded naturally. Banana petiole contains more than 50% cellulose. The purpose of this study was to determine the effect of adding a combination of glycerol and CMC on the characteristics of biodegradable film based on banana petiole cellulose. This study used randomized block design which consists of 9 combinations of glycerol and CMC, namely P1 (0.5%:2%), P2 (0.5%:2.5%) P3 (0.5%:3%), P4 ( 1%:2%), P5 (1%:2.5%), P6 (1%:3%), P7 (1.5%:2%), P8 (1.5%:2.5%) , P9 (1.5%:3%). The research results showed that the addition of glycerol and CMC had an effect on tensile strength, percent elongation, thickness and water vapor transmission rate of biodegradable films based on banana stem cellulose. The highest tensile strength, percent elongation and thickness values were produced by treatment of a combination of glycerol 1.5% and CMC 3%. The values obtained for tensile strength value of 138 MPa, percent elongation of 32.325%, thickness of 0.193 mm, and water vapor transmission rate of 11.5767 g/m<sup>2</sup>/day, it can survive at room temperature for four weeks and degraded in the soil for four weeks.

Keywords : biodegradable film, banana petiole, glycerol, CMC

## ABSTRAK

### KARAKTERISTIK *BIODEGRADABLE FILM* BERBASIS SELULOSA PELEPAH PISANG (*Musa paradisiaca*) DENGAN PENAMBAHAN GLISEROL DAN *CARBOXY METHYL CELLULOSE* (CMC)

Oleh

CITRA ALIFIANI

*Biodegradable film* merupakan *film* yang dapat didaur ulang dan dapat dihancurkan secara alami. Pelepah pisang mengandung selulosa lebih dari 50%. Tujuan dari penelitian ini untuk mengetahui pengaruh penambahan kombinasi gliserol dan CMC terhadap karakteristik *biodegradable film* berbasis selulosa pelepah pisang. Penelitian ini menggunakan RAKL yang terdiri dari 9 kombinasi gliserol dan CMC, yaitu P1 (0,5%:2%), P2 (0,5%:2,5%) P3 (0,5%:3%), P4 (1%:2%), P5 (1%:2,5%), P6 (1%:3%), P7 (1,5%:2%), P8 (1,5%:2,5%), P9 (1,5%:3%). Hasil penelitian menunjukkan penambahan gliserol dan CMC berpengaruh terhadap nilai kuat tarik, persen pemanjangan, ketebalan, dan laju transmisi uap air *biodegradable film* berbasis selulosa pelepah pisang. Nilai kuat tarik, persen pemanjangan, dan ketebalan tertinggi dihasilkan oleh perlakuan dengan penambahan kombinasi gliserol 1,5% dan CMC 3%. Nilai yang diperoleh untuk kuat tarik sebesar 138 MPa, persen pemanjangan 32,325%, ketebalan 0,193 mm, dan laju transmisi uap air 11,5767 g/m<sup>2</sup>/hari. *Biodegradable film* bertahan di suhu ruang selama empat minggu dan terdegradasi di dalam tanah selama empat minggu.

Kata kunci : *biodegradable film*, pelepah pisang, gliserol, CMC