ABSTRACT

CHARACTERISTICS OF *BIODEGRADABLE FILM* BASED ON CANE WASTE CELLULOSE (*Saccharum officinarum* L.) WITH THE ADDITION OF CHITOSAN AND CASSAVA PEEL STARCH (*Manihot esculenta* Crantz)

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Biodegradable film is a packaging material made of materials that are easily decomposed by microorganisms. Sugarcane bagasse contains 45.96% cellulose which has the potential to be used to make biodegradable film. The aim of this research is to determine the effect of the addition of chitosan and cassava peel starch on the characteristics of sugarcane bagasse cellulose-based biodegradable films, as well as to determine the effect of the interaction between chitosan and cassava peel starch on the characteristics of sugarcane bagasse cellulose-based biodegradable films. This study used RAKL two factors and three replications. The first factor is the chitosan concentration (0.5%, 1% and 1.5%). The second factor is cassava peel starch (1%, 2% and 3%). The research results showed that the concentration of chitosan and cassava peel starch had a significant effect on the tensile strength, percent elongation, thickness and water vapor transmission rate. The best results were obtained at a concentration of 1.5% chitosan and 2% cassava peel starch with a tensile strength value of 14.20 MPa, a percent elongation value of 21.23%, a thickness of 0.2320 mm, and a water vapor transmission rate of 0.000619 g/m² /day. Biodegradable film based on sugarcane bagasse can last at room temperature for six weeks and decomposes in the soil for 21 days.

Keywords : biodegradable film, sugarcane bagasse, cellulose, chitosan, and cassava peel starch.

ABSTRAK

KARAKTERISTIK *BIODEGRADABLE FILM* BERBASIS SELULOSA AMPAS TEBU (*Saccharum officinarum* L.) DENGAN PENAMBAHAN KITOSAN DAN PATI KULIT SINGKONG *(Manihot esculenta* Crantz*)*

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Biodegradable film adalah bahan pengemas yang terbuat dari bahan-bahan yang mudah terurai oleh mikroorganisme. Ampas tebu mengandung selulosa sebesar 45,96% berpotensi digunakan untuk pembuatan *biodegradable film.* Tujuan dari penelitian ini untuk mengetahui pengaruh penambahan kitosan dan pati kulit singkong terhadap karakteristik *biodegradable film* berbasis selulosa ampas tebu, serta mengetahui pengaruh interaksi antara kitosan dan pati kulit singkong terhadap karakteristik *biodegradable film* berbasis selulosa ampas tebu. Penelitian ini menggunakan RAKL dua faktor dan tiga ulangan. Faktor Pertama yaitu konsentrasi kitosan (0,5%, 1%, dan 1,5%). Faktor kedua yaitu pati kulit singkong (1%, 2%, dan 3%). Hasil penelitian menunjukan bahwa konsentrasi kitosan dan pati kulit singkong berpengaruh nyata terhadap nilai kuat tarik, persen pemanjangan, ketebalan, dan laju transmisi uap air. Hasil terbaik diperoleh pada konsentrasi kitosan 1,5% dan pati kulit singkong 2% dengan nilai kuat tarik 14,20 MPa, nilai persen pemanjangan 21,23%, ketebalan 0,2320 mm, dan laju transmisi uap air 0,000619 g/m²/hari. *Biodegradable film* berbasis selulosa ampas tebu dapat bertahan di suhu ruang selama enam minggu dan terurai di dalam tanah selama 21 hari.

Kata Kunci : *biodegradable film,* ampas tebu, selulosa, kitosan, dan pati kulit singkong.