

ABSTRAK

PEMANFAATAN PATI BONGGOL PISANG KEPOK (*MUSA PARADISIACA L.*) DALAM PEMBUATAN PLASTIK *BIODEGRADABLE* DENGAN PENAMBAHAN *LOW DENSITY POLYETILENE* (LDPE)

Uswatun Khasanah, 2026, 55 Halaman, 13 Tabel, 14 Gambar, 4 Lampiran

Penggunaan plastik konvensional yang sulit terdegradasi mendorong pengembangan plastik *biodegradable* berbahan alami yang ramah lingkungan. Penelitian ini bertujuan untuk mengetahui pengaruh variasi konsentrasi pati bonggol pisang kepok (*Musa paradisiaca L.*) dan volume gliserol terhadap karakteristik plastik *biodegradable* dengan penambahan LDPE sebesar 2 gram serta menentukan formulasi optimum berdasarkan SNI 7188.7:2016. Penelitian dilakukan secara eksperimental dengan variasi massa pati 0,25–1,5 gram dan gliserol 0,5–1 mL melalui metode *blending* dan *grafting* menggunakan maleic anhydride (MAH) dan benzoil peroksida (BPO). Karakterisasi meliputi uji kuat tarik dan elongasi, ketahanan air, serta biodegradasi tanah. Hasil penelitian menunjukkan bahwa peningkatan konsentrasi pati meningkatkan kemampuan biodegradasi, namun menurunkan sifat mekanik dan ketahanan air akibat campuran yang semakin sulit homogen. Nilai optimum masing-masing parameter diperoleh pada elongasi sebesar 18%, kuat tarik sebesar 2,04 MPa, biodegradasi sebesar 74,71%, dan ketahanan air sebesar 57,20%. Meskipun belum terdapat satu formulasi yang optimum pada seluruh parameter, pati bonggol pisang kepok berpotensi dimanfaatkan sebagai bahan baku alternatif dalam pembuatan plastik *biodegradable* yang ramah lingkungan.

Kata kunci: plastik *biodegradable*, pati bonggol pisang kepok, LDPE, gliserol, karakteristik plastik.

ABSTRAC

UTILIZATION OF KEPOK BANANA STEM STARCH (*MUSA PARADISIACA L.*) IN THE PRODUCTION OF BIODEGRADABLE PLASTIC WITH THE ADDITION OF LOW-DENSITY POLYETHYLENE (LDPE)

Uswatun Khasanah, 2026, 55 Pages, 13 Tabel, 14 Figure, 4 Attachment

*The use of conventional plastics that are difficult to degrade has driven the development of environmentally friendly, naturally derived biodegradable plastics. This study aims to determine the effect of varying concentrations of kepok banana (*Musa paradisiaca L.*) cormstarch and glycerol volume on the characteristics of biodegradable plastics with the addition of 2 grams of LDPE, as well as to determine the optimal formulation based on SNI 7188.7:2016. The study was conducted experimentally with variations in starch mass ranging from 0.25 to 1.5 grams and glycerol volume ranging from 0.5 to 1 mL, using blending and grafting methods with maleic anhydride (MAH) and benzoyl peroxide (BPO). Characterization included tensile strength and elongation tests, water resistance, and soil biodegradation. The results showed that increasing the starch concentration enhanced biodegradability but reduced mechanical properties and water resistance due to the mixture becoming increasingly difficult to homogenize. The optimal values for each parameter were obtained at an elongation of 18%, a tensile strength of 2.04 MPa, a biodegradation rate of 74.71%, and water resistance of 57.20%. Although no single formulation has yet been identified that is optimal across all parameters, kepok banana stem starch has the potential to be utilized as an alternative raw material in the production of environmentally friendly biodegradable plastics.*

Keywords: *biodegradable plastic, kepok banana stem starch, LDPE, glycerol, plastic properties.*