

ABSTRACT
INDONESIA SCIENCE PROJECT OLIMPIAD



**ECO-FRIENDLY PAPER BAG MADE FROM WASTE RICE
STRAW (*Oryza sativa*) AND BANANA STEMS (*Musa
Paradisiaca*)**



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ABSTRACT

The World Wildlife Fund (WWF) predicts that the amount of plastic waste in the ocean in 2050 will be more than the existing fish population (WWF, 2020). As public awareness of the dangers of plastic waste has grown, several local governments in Indonesia have used plastic bags in retail / convenience stores and replaced them with bags made of cloth. Bag made of cloth has not been known to be effective in reducing waste problems in Indonesia. Paper bags as a solution to the problem of plastic waste have limited raw materials. This study aims to make paper bag material from rice straw and banana stems. Paper samples were made by combining straw and banana stems in order to obtain paper samples that were tested chemically and physically at the Pulp and Paper Center. The chemical properties test results (moisture, lignin and cellulose content) indicated that the straw pulp had higher chemical properties than the banana stem pulp. The results of the one way ANOVA analysis showed that the combination of banana stem midrib and straw had a significant effect on the physical properties of paper. The Duncan test shows that the A3B1 sample (75% banana stem: 25% rice straw) has the parameter of tensile resistance, the best tensile index according to the Indonesian national standard (SNI).

Key words: plastic waste, eco-friendly paper bags, pulp chemical test, paper chemical properties test.

ABSTRAK

World Wildlife Fund (WWF) memprediksi bahwa jumlah sampah plastik dilautan pada tahun 2050 akan lebih banyak daripada populasi ikan yang ada (WWF, 2020). Seiring bertambahnya kesadaran masyarakat akan bahaya sampah plastic, beberapa pemerintah daerah di Indonesia sudah melarang penggunaan kantong plastic di toko ritel/swalayan dan diganti dengan kantong tas berbahan kain. Kantong tas berbahan kain belum diketahui efektivitasnya dalam mengurangi masalah limbah di Indonesia. Kantong kertas (paper bag) sebagai solusi masalah limbah plastic memiliki bahan baku yang terbatas. Penelitian ini bertujuan untuk membuat material kantong kertas dari limbah jerami padi dan batang pisang. Sampel kertas dibuat dengan cara mengkombinasikan jerami padi dan batang pisang sehingga diperoleh sampel kertas yang diuji secara kimia dan fisika di Balai Besar Pulp dan Kertas. Hasil uji sifat kimia (kadar air, lignin dan selulosa) menunjukkan bahwa pulp jerami padi memiliki sifat kimia yang lebih tinggi dibandingkan dengan pulp batang pisang. Hasil analisis one way anova menunjukkan bahwa kombinasi batang pisang dan jerami padi berpengaruh signifikan terhadap sifat fisik kertas. Uji Duncan menunjukkan bahwa sampel A3B1 (75% batang pisang: 25% jerami padi) memiliki rerata parameter ketahanan tarik, indeks tarik yang paling baik sesuai standart nasional Indonesia (SNI).

Kata kunci: sampah plastic, kantong kertas ramah lingkungan, uji sifat kimia pulp, uji sifat kimia kertas.