ABSTRAK

PEMANFAATAN LIMBAH TONGKOL JAGUNG DAN RUMPUT GAJAH SEBAGAI BAHAN BAKU PEMBUATAN KERTAS KORAN DENGAN VARIASI WAKTU PEMASAKAN DAN KONSENTRASI NaOH

M. Iqbal Ramadhan, 2026, 60 Halaman, 6 Tabel, 20 Gambar, 3 Lampiran

Meningkatnya kebutuhan kertas koran mendorong pemanfaatan bahan baku alternatif yang lebih ramah lingkungan untuk mengurangi ketergantungan pada kayu. Penelitian ini bertujuan memanfaatkan limbah tongkol jagung *(Zea mays L.)* dan rumput gajah *(Pennisetum purpureum S.)* sebagai bahan baku *pulp* non-kayu. Penelitian dilakukan menggunakan rancangan acak lengkap (RAL) dengan dua variabel bebas, yaitu waktu pemasakan selama 60, dan 90 menit serta konsentrasi NaOH sebesar 7%, 10%, 13%, 16%, dan 19%. *Pulp* hasil pemasakan kemudian mengalami proses *bleaching* menggunakan H_2O_2 35% dan selanjutnya dibentuk menjadi lembaran kertas koran dengan penambahan bahan aditif berupa kitosan, VCO, gliserin, dan tapioka untuk meningkatkan kelembutan serta kekuatan produk. Karakteristik yang dianalisis meliputi kadar α-selulosa, β-selulosa, dan γ-selulosa, gramatur, daya tarik, dan *brightness*. Variasi konsentrasi NaOH dan waktu pemasakan diperkirakan mempengaruhi efektivitas proses delignifikasi serta kualitas *pulp* yang dihasilkan. Karakteristik kertas koran yang dihasilkan dievaluasi melalui uji gramatur, daya tarik, dan *brightness* sesuai SNI 7273:2008. Hasil menunjukkan bahwa variasi konsentrasi pelarut dan waktu pemasakan berpengaruh signifikan terhadap kualitas kertas koran yang dihasilkan. Komposisi waktu pemasakan 60 menit dan konsentrasi NaOH 19% memberikan hasil optimal dari seluruh sampel. Didapatkan nilai gramatur 48,71 g/m^2, *brightness* 62,8% yang sudah memenuhi SNI. Pada daya tarik didapatkan 0,68 kN/m, seluruh sampel masih belum memenuhi batas minimal standar SNI 7273:2008. Pada parameter pengujian selulosa, hasil *alpha* selulosa tertinggi adalah 84,14% pada saat konsentrasi NaOH 10% dan waktu pemasakan 60 menit serta *betha* selulosa 9,94%, dan *gamma* selulosa 5,7%. Penelitian ini membuktikan bahwa limbah tongkol jagung dan rumput gajah berpotensi sebagai bahan baku alternatif *pulp* non-kayu dalam pembuatan kertas koran.

Kata kunci: kertas koran, *pulp*, tongkol jagung, rumput gajah, NaOH.

ABSTRACT

UTILIZATION OF CORN COBS AND ELEPHANT GRASS WASTE AS RAW MATERIALS FOR NEWSPAPER PRODUCTION WITH VARYING COOKING TIMES AND NaOH CONCENTRATIONS

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The growing demand for newsprint has driven the use of more environmentally friendly alternative raw materials to reduce dependence on wood. This study aims to utilize corn cobs (Zea mays L.) and elephant grass (Pennisetum purpureum S.) as raw materials for non-wood pulp. The study was conducted using a completely randomized design (CRD) with two independent variables: cooking time of 60 and 90 minutes, and NaOH concentrations of 7%, 10%, 13%, 16%, and 19%. The parameters tested included cellulose content, basis weight, tensile strength, and brightness, each measured once without repetition. The cooked pulp was then bleached using 35% H_2O_2 and subsequently formed into newsprint sheets with the addition of additives such as chitosan, VCO, glycerin, and tapioca to improve the product's softness and strength. The characteristics analyzed included α-cellulose, β-cellulose, and γ-cellulose content, basis weight, tensile strength, and brightness. Variations in NaOH concentration and cooking time were expected to influence the effectiveness of the delignification process and the quality of the resulting pulp. The characteristics of the resulting newsprint were evaluated through basis weight, tensile strength, and brightness tests in accordance with SNI 7273:2008. The results showed that variations in solvent concentration and cooking time had a significant effect on the quality of the resulting tissue paper. A combination of a 60-minute cooking time and a 19% NaOH concentration yielded the best results. The results showed a basis weight of 48.71 g/m² and a brightness of 62.8%, both of which met SNI standards. However, at a tensile strength of 0.68 kN/m, none of the samples met the minimum threshold specified in SNI 7273:2008. Among the test parameters, the highest cellulose alpha value was 84.14% at a NaOH concentration of 7% and a cooking time of 60 minutes. This study demonstrates that corn cobs and elephant grass waste have the potential to serve as alternative non-wood pulp raw materials in newsprint production.

***Keywords**: newsprint, pulp, corn cobs, elephant grass, NaOH.*