

ABSTRAK

Minat penelitian mengenai pemanfaatan limbah semakin meningkat, terutama dipicu oleh meningkatnya kesadaran terhadap kegunaan limbah utamanya limbah hasil pertanian untuk dijadikan sebagai bahan baku suatu produk di seluruh penjuru dunia. Penelitian ini bertujuan untuk mengetahui pengaruh dosis iradiasi gamma terhadap kadar glukosa dari limbah jagung serta struktur morfologi pasca pretreatment iradiasi gamma. Uji yang dilakukan yaitu kualitatif glukosa, kuantitatif glukosa, dan uji SEM. Penelitian menunjukkan bahwa penggunaan *pre-treatment* iradiasi gamma memberikan pengaruh pada peningkatan kadar glukosa. Perlakuan radiasi gamma mampu meningkatkan hasil kadar glukosa dari dosis 0 kGy hingga 1000 kGy. Secara statistik, penggunaan iradiasi gamma tidak memberikan pengaruh nyata terhadap sampel limbah batang jagung ($p > 0,05$), sementara pada sampel limbah kulit dan bonggol jagung penggunaan radiasi gamma sama-sama memberikan pengaruh nyata terhadap kadar glukosa yang dihasilkan ($p < 0,05$). Kadar glukosa tertinggi ditunjukkan pada dosis 1000 kGy yaitu 204,38 mM sampel batang jagung, 287,68 mM sampel kulit jagung dan 309,65 mM sampel bonggol jagung. Bonggol jagung menjadi sampel dengan nilai kadar glukosa tertinggi, sedangkan nilai kadar glukosa terendah yakni pada batang jagung. Uji SEM menunjukkan perbedaan struktural dalam morfologi permukaan biomassa antara sampel limbah jagung yang diberi perlakuan awal iradiasi dengan yang tidak diberi perlakuan awal iradiasi.

Kata Kunci: Iradiasi Gamma, Limbah Jagung, SEM

ABSTRACT

Interest in research regarding the use of waste is increasing, mainly triggered by increasing awareness of the use of waste, especially agricultural waste, to be used as raw material for products throughout the world. This study aims to determine the effect of gamma irradiation dose on the glucose content of corn waste as well as the morphological structure after gamma irradiation pretreatment. The tests carried out were qualitative glucose, quantitative glucose and SEM tests. Research shows that the use of gamma irradiation pre-treatment has an effect on increasing glucose levels. Gamma radiation treatment is able to increase glucose levels from a dose of 0 kGy to 1000 kGy. Statistically, the use of gamma irradiation did not have a real effect on corn stalk waste samples ($p > 0.05$), while on corn husk and corncob waste samples the use of gamma radiation had an equally significant effect on the glucose levels produced ($p < 0.05$). The highest glucose levels were shown at a dose of 1000 kGy, namely 204.38 mM for corn stalk samples, 287.68 mM for corn husk samples and 309.65 mM for corn cob samples. Corn cobs were the sample with the highest glucose content values, while the lowest glucose content values were in corn stalks. SEM tests show structural differences in biomassa surface morphology between corn waste samples that were pretreated with irradiation and without irradiation.

Keywords: Gamma Irradiation, Corn Waste, SEM