

Quality and Quantity Test of Liquid Smoke from Corn Cobs Using the Pyrolysis Method on a Solar-Based Fish Smoking Device

Risse Entikaria Rachmanita, S.Pd., M.Si. (*Ungraduated Tesis*)

Sofi Dwi Pratiwi
Renewable Energy Engineering Study Program
Department of Engineering

ABSTRACT

This study aimed to analyze the quantity and quality of liquid smoke from corn cobs produced through the pyrolysis method using a solar-powered fish smoking device, as well as to evaluate quality improvements through a further distillation process. The pyrolysis process was carried out for 6 hours at an average temperature of 500°C with two variations: one without fish and one with fish. Tested parameters included yield, organoleptic test, pH, acid content, specific gravity, and phenol content. The results showed that the volume of liquid smoke was higher in the variation with fish, but the yield was lower due to the water content of the fish. The liquid smoke resulting from pyrolysis was characterized by a brown to yellowish-brown color with a strong smoky aroma, while after distillation it changed to pale yellow with a lighter aroma. The pH value ranged from 2-3 and still met the SNI 8985:2021 standard. The acid content decreased after distillation, while the phenol content, which initially exceeded the standard, was reduced to near or meet the maximum limit. The distillation process was proven to be able to increase the purity of liquid smoke (grade 1), although it caused a decrease in some active compounds. Overall, the utilization of corn cobs through solar-powered pyrolysis has the potential to be an environmentally friendly biomass waste processing solution with fairly good product quality.

Keywords: *corn cobs, distillation, liquid smoke, pyrolysis, solar power*