

***Optimization of Extraction Process Duration and Imbibition Water Addition of
Crude Palm Oil (CPO) from the Oil Palm Plantation of Politeknik Negeri
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ABSTRACT

The demand for Crude Palm Oil (CPO) as a raw material for the food industry and biodiesel production continues to increase, requiring an extraction process capable of producing high oil yield while maintaining good oil quality. One approach to improving the extraction process is optimizing the steaming duration and the addition of imbibition water during the pressing stage of oil palm fruits. This study aimed to analyze the effects of steaming duration and imbibition water addition on the yield of CPO extracted from oil palm fruits and to evaluate the quality of the resulting CPO based on the Indonesian National Standard (SNI 01-2901-2006). The study employed an experimental method using a factorial Completely Randomized Design (CRD) with two factors: steaming duration (60, 90, 120 minutes) and imbibition water addition (15, 20, 25%^v/m). The optimum treatment was obtained from the A3B3 combination (120 minutes of steaming and 25%^v/m imbibition water addition), which produced the highest CPO yield of 16.92%. The quality characteristics of the CPO obtained from the optimum treatment showed a free fatty acid (FFA) content of 9.00%, an iodine value of 45.20 ± 0.14 g /100 g oil, color values of L = 36.63, a = 22.84, and b = 17.78, an average moisture content of 0.09%, and an average sediment content of 0.49%. Based on SNI 01-2901-2006, the color, moisture content, and sediment content met the required quality standards, whereas the free fatty acid content and iodine value did not comply with the specified standard.

Keywords: CPO quality, Crude Palm Oil, imbibition water, oil yield, steaming duration