Nutthawadee Thongjun 2012: Ethylene Absorber from Oil Palm Frond In-Situ Activated Carbon for Papaya cv. Plug Mai Lai. (*Carica papaya L.*). Master of Science (Packaging Technology), Major Field: Packaging Technology, Department of Packaging and Materials Technology. Thesis Advisor: Assistant Professor Lerpong Jarupan, Ph.D. 127 pages.

An ongoing concern for environmental issues leads to value adding of unutilized oil palm wastes from the plantation in Thailand. Abandoned oil palm fronds considered in this study was utilized as raw material for a substrate of ethylene absorber. This study aimed to find an optimum condition for pulping oil palm fronds by sulfate or Kraft process that later was in-situ with commercial activated carbon with various amounts of 10%, 20% and 30% (based on oven dry weight). The resulted ethylene absorber was tested for physical, mechanical and permeation properties. Efficacy of the ethylene absorber from oil palm frond in-situ activated carbon for extending shelf life of papaya cv. Plug Mai Lai was also investigated. The results showed that the pulp yield of 35.78% was achieved under the optimal pulping condition of 24% active alkali, 30% sulfidity, liquor-to-raw material ratio of 5:1 with the cooking temperature at 170 ^{o}C for 90 min. Physical and mechanical properties of the ethylene absorber in terms of density, thickness swelling, tensile strength and Young's modulus were decreased as the amount of in-situ activated carbon increased. Adversely, moisture content, water absorption, %elongation, and oxygen transmission rate were increased as increasing the amount of activated carbon. The efficacy study showed that the ethylene absorber in-situ with 10% activated carbon performed the highest gaseous ethylene absorption; it decelerated shelf life of papaya cv. Plug Mai Lai from 6 to 20 day at the storing temperature of 13$\pm$2 ^{o}C.

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