

## **Response surface methodology model of hydrothermal treatment parameters on decay resistance of oil palm wood**

### **ABSTRACT**

Effect of hydrothermal treatment on oil palm wood (*Elaeis guineensis*) in term of decay resistance against white rot fungus (*Trametes versicolor*) and equilibrium moisture content (EMC) was investigated in the present study. Response surface methodology (RSM) models for treatment temperature, treatment duration and buffered medium of hydrothermally treated oil palm wood were developed. Oil palm wood were immersed in the buffered media ranging from pH 4-9 and heated, 60-160 °C for 13-147 min, respectively. After treatment, weight loss and EMC of the treated samples caused by white rot fungus were evaluated. Equations with high adjusted  $r^2$  value were obtained using the RSM model. The results revealed that the weight loss of the treated oil palm wood caused by white rot fungus reduced as the treatment temperature and time increased. Buffered medium showed insignificant effect on improvement of decay resistance of the oil palm wood. However, slightly better decay resistance was found in the samples treated in neutral and alkaline medium. On the other hand, EMC of the treated samples reduced with increasing temperature, and the reduction was prominently higher in acidic medium.

**Keyword:** Buffered medium; Central composite design; *Elaeis guineensis*; *Trametes versicolor*; White rot fungus