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Quantification of the Torrefaction Influenceon Lignin Composition of Khaya senegalensis biomass

Abstract

In Malaysia, Khaya senegalensis has been introduced as landscape and shade tree. However, Khaya senegalensis has few suitable characteristics to be developed as future energy crops. Fast growing and can be planted in marginal soil are among the important criteria of energy crop that belong to this species. This research was conductedto determine the influence of torrefaction on the lignin composition of the biomass, as it can influence the performance as feedstock for bioenergy production. The biomass sample was torrefied at different temperature (225, 250, 275 and 300°C) and different duration(30, 60, 90 minutes). The result shows that the torrefaction severity has the significant impact on the weight loss and lignin composition of the biomass sample. The total lignin of the torrefied sample increases when the torrefaction severity increases. It was found thatthe changes in the lignin composition have strong correlation with the calorific value of the biomass.