

**Physical and histochemical fiber properties of Kenaf (*Hibiscus cannabinus* L.)
affected by different water treatments**

ABSTRACT

Kenaf (*Hibiscus cannabinus* L.) is highly considered in the pulp and paper industry and is known as a drought tolerant plant. Application of kenaf fiber has attracted a huge interest in the world due to increased paper consumption and protected tropical forest. The impact of three water treatments on the physical and histochemical properties of three varieties of kenaf (*Hibiscus cannabinus* L.) namely Fuhong 991 (FH991), V36 and Kohn-Kaen 60 (KK60) relevant to pulp production were investigated. Plants were grown in the glasshouse at Universiti Putra Malaysia (UPM). The water treatments consist of 100% of Evapotranspiration Replacement (ER), 50% of ER (moderate stress) and 25% of ER (severe stress) were imposed on plants for two months and replicated three times in a split plot arrangement based on randomized complete block design (RCBD). Water stress did affect the fiber dimensional and derived values for all three varieties in a negative way. Well-watered varieties V36 and FH991 gained the highest value of bast and core fiber yield, respectively. All varieties of kenaf subjected to 100% of FC watering had the highest value of fiber length and fiber diameter. The fiber morphological data of all kenaf varieties proved that there are differences in their length, diameter, lumen diameter and cell wall thickness as different varieties could be subjected to different water treatments.

Keyword: Bast fiber; Core fiber; Fiber length; Fiber diameter; Cell wall thickness and lumen diameter; Histochemical properties