Anatomical Structures and Fiber Morphology of New Kenaf Varieties

ABSTRACT

Kenaf plant is claimed as one of the fast-growing herbaceous plants with the high potential as a fiber material or lignocellulosic material. Nine kenaf varieties i.e., Q-Ping, KK60, V12, V19, V36, V132 and NS V133 and TK were introduced recently by Taman Pertanian Universiti, Universiti Putra Malaysia as one of the potential plant to replace tobacco plantation. Since, these nine kenaf varieties are new to Malaysia, therefore, there is a need to study their anatomical structures and fiber morphology as well as microscopic appearances to understand their different and similarity. Cell morphology and anatomical appearances were observed and evaluated under the image analysis system (Leitz DMRB). From the results, V19 and V12 had the wider ray among the nine varieties, whereas other varieties in their microscopic appearance were almost similar to those observed in many diffuse-porous hardwoods. The longest fiber length was observed in variety TK (2.96 mm) followed by V36. Q-ping showed the widest fiber diameter and lumen diameter amongst the nine varieties, with value of 28.64 μm in bast fiber and 28.06 μm in core diameter. However, Q-ping had the thinnest core cell wall with the thickness of 3.34 μm. In term of fiber length, all the kenaf varieties bast fiber has longer fiber than core fiber. The kenaf core of nine varieties has wider fiber diameter and fiber lumen diameter than the bast fiber. Conclusively, although kenaf exhibit similarity in some fiber morphology and anatomical structures, however, there still some distinction that can be used to differentiate these kenaf variety.

Keyword: Kenaf varieties, anatomical structure, fiber morphology