

Gibberellic acid (GA3) affects growth and development of some selected kenaf (*Hibiscus cannabinus* L.) cultivars

ABSTRACT

Kenaf (*Hibiscus cannabinus* L.), is a potential alternative of natural wood fibers for biocomposite and pulp and paper industry. However, the average fiber length of kenaf is usually shorter than the critical length to be used for high quality biocomposite materials. Increasing fiber length and quality can diversify its application in fiber based industries. Gibberellic acid (GA3) is an important plant growth regulator that is actively involved in cell elongation and other important physiological functions in plant growth, development and flowering. To investigate the effects of gibberellin on growth, morphology, and fiber quality, some selected cultivars of kenaf plants were treated with aqueous solution of varying concentrations of GA3. The effects on vegetative and reproductive growth were evaluated weekly for sixteen consecutive weeks and fiber morphology after harvesting at 18th week. Gibberellin treatment significantly reduced the vegetative growth in terms of stem diameter, leaf number, and leaf size but stimulated fiber elongation, resulted in a tall and slender plant with curled leaves. Gibberellin treatment also impaired reproductive growth by inhibiting floral initiation and development in all treated plants whereas the control plants were in its seed harvesting stage. This study provided novel insights into the effects of GA3 in regulating vegetative and reproductive growth of kenaf as well as improving its fiber properties.

Keyword: Kenaf; Biocomposite; Fiber quality; Fiber elongation; Gibberellic acid; Plant growth regulator

