

# Bioenergy Production from the Pre-treatment of Bagasse as raw Material for Paper Making

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## ABSTRACT

*Bagasse is fibrous waste generated in sugar industry from sugar cane crushing. It is widely used as raw material in pulp and paper industry. Seasonal availability, limited storability and relatively higher pulping chemical consumption make bagasse a less favoured raw material for paper making. Residual sugar, extractables and high pith content in bagasse are responsible for this. Because of this reason, bagasse is mostly burnt as fuel in the cogeneration units of sugar mills. Reduction of residual sugar, extractables and pith content at source (within the sugar mills), can enhance quality and storability of bagasse and pulp chemical consumption can also be reduced.*

*Controlled dry digestion of fresh bagasse is believed to remove, specially, residual sugars and other extractables from bagasse, improve its storability and reduce pulping chemical requirement. Leachate generated from the dry digestion can be treated for the biogas generation. The biogas can be burnt as fuel in the cogeneration units of the sugar mills and the treated leachate can be reused in the bagasse dry digestion. In the present study, dry digestion of bagasse has been attempted and its impacts on bagasse as raw material for paper making have been studied. Further, a two stage anaerobic baffled reactor has been tried for the treatment of the leachate generated and biogas generation potential has been attempted. Material loss from the dry digestion, improvement in quality in terms of residual sugars, extractables, cellulose, hemicellulose, lignin, and biogas generation rates observed are discussed in this paper.*

*Anaerobic digestion of bagasse has resulted in reduction of cellulose, hemicellulose, lignin, residual sugars content upto 30.1%, 7.5%, 3.2%, 0.5% respectively.*

**Keywords:** *Bagasse, leachate, biogas, anaerobic baffled reactor.*