

# **SUGARCANE BAGASSE PHYSICAL CHEMICAL CHARACTERIZATION: THE IMPORTANCE OF THE SAMPLING PROTOCOL**

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One way to increase the ethanol production from sugarcane is to use the sugarcane bagasse for enzymatic hydrolysis, producing the called second generation ethanol. Sugarcane bagasse was always considered as a residue from the sugar and ethanol production, and burnt in the boilers in order to produce vapor and electrical energy. To be used in enzymatic hydrolysis process, sugarcane bagasse should be fully characterized as it is usually done for a raw material to be used in industrial processes. The objective of this work was to characterize sugarcane bagasse determining the moisture and ash contents, extractives (in water and in ethanol), cellulose, hemicelluloses and lignin contents, bulk and particle densities and particle size distribution. Bagasse is a very heterogeneous material, because of this, a restricted sampling protocol for analysis was developed in order to have representative samples of the bagasse collected in the mill, and should be used in order to avoid misinterpretations of the results. Samples of fresh sugarcane bagasse (recem-milled) were collected in different periods during the seasons in 2009 and 2010. The most significant change occurred in the ash content with the following results: dry period (2.5%) < wet period (5%) < harvest after some rainy days (15%). Ash content includes the natural mineral composition of the sugarcane plus the impurities added during harvesting, transport and processing. Ash content impacts the bulk and particle densities as well as the particle size distribution.

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