

Energetic Compaction of Sugarcane Trash by Fast Pyrolysis

Baldassin Jr, R.¹; Cortez, L.A.B.¹; Jordan, R.A.^{2,1}; Mesa-Pérez, J.¹

1 - State University of Campinas, Faculty of Agriculture Engineering, Brazil; 2 - Federal University of Grande Dourados, Faculty of Agriculture Science, Brazil

Currently, the Brazilian model for the production of bioethanol and sugar from sugarcane considers the straw (green and dry leaves) as an agricultural residue, with no use for this material, either as energy source or as animal feed. As energy source, it happens mainly due to the high costs involved in the logistic process (recovery and transportation), as well the fact that the mills do not require this energy input, because the volume of bagasse generated is sufficient to meet the energy demand of the bioethanol and sugar production (energy self-sufficiency, steam and electricity generation). However, the change of world view in the production and use of energy has boosted efforts to increase energy efficiency and promoting sustainability in energy production. In this new context, several studies for the use of sugarcane trash are being conducted to facilitate their use, as this input represents 1/3 of primary energy from sugarcane. In this scene, the fast pyrolysis process can help to facilitate this recovery, because it is a process to promote increased energetic density of trash (transforming solid biomass into liquid biomass), which can reduce the logistic costs of energy. This paper shows results of pyrolysis exploratory tests with sugarcane trash in the Fast Pyrolysis Pilot Plant of Unicamp. Sugarcane trash crushed and dry - particle size between 1 and 5 mm and sun drying - was used as raw material. Yields production (mass basis) and the calorific values obtained were 22,9 % and 28266 MJ/m³, and 29,8 % and 237 MJ/m³, for the bio-oil and charcoal, respectively. This study showed that it could be possible to transport a freight (volume basis) with 18 times more energy in the form of bio-oil than in bulk sugarcane trash.

Key words: Bio-oil; Charcoal; Yield Production, Calorific Value, Energetic Density

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