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Biotechnological and bioeconomic potential of banana agro-industrial waste

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In a first phase of research, bio-economic potential of ripe banana peel that is generated during the process of industrial dehydration of the fruit was determined. Likewise, it could quantify the amount of dextrose syrup obtainable by enzymatic hydrolysis bioprocess this agro-industrial residue. For the first phase, anaerobic reactor was used to determine the volume of CO_2 that is not emitted in the study area by the use of ripe banana peel by enzymatic hydrolysis. At the same time by gas chromatography, CO_2 concentration produced by the shell was quantified. For the second phase, an aerobic bioreactor was prepared with a P/V ratio shell mature/60% water banana, previously subjected to a grinding pretreatment with more sodium hydroxide. The biomass obtained was inoculated with conidia of the fungus Trichoderma ressei in a concentration of 0.6 g/L, for 6 days at room temperature and pH 4.2-5. Glucose concentration present in the hydrolyzate was measured using the method of DNS (Dinitro salicylic acid) in a visible UV spectrophotometer at 540 nm. The results show that the potential bioeconomic shell results in a volume of 403.6 metric tons CO_2/year (0.73 L CO_2/kg banana peel ripe day) with a concentration of 99.97% purity which would be leaving to issue the environment in the Province of El Oro by this agro-industrial activity. A bio-economic potential of $ 1413.2/year in carbon incentive for businesses by this gas mitigation to climate change, which could be awarded if these residues will be used to its bioconversion in dextrose syrup was determined and would increase if you continue its bioconversion into bioethanol. Furthermore, the biotechnological potential results in obtaining 5.91 g/L of dextrose syrup by enzymatic hydrolysis of the discarded shell.

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