Clean Technologies and Environmental Policy

A techno-economic feasibility of a process for extraction of starch from waste avocado seeds

Tamrat Tesfaye[1] · Million Ayele[1] · Eyasu Ferede[1] · Magdi Gibril[2] · Fangong Kong[2] · Bruce Sithole[3,4]

[1] Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Bahir Dar, Ethiopia

[2] State Key Laboratory of Biobased Material and Green Papermaking, Qilu University of Technology, Jinan, Shandong, China

[3] Discipline of Chemical Engineering, University of KwaZulu-Natal, Durban, South Africa

[4] Biorefnery Industry Development Facility, Chemicals, Cluster Programme, Council for Scientifc and Industrial Research, Durban, South Africa

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Abstract

Generation of waste from the agro-processing industry is continually increasing due to increasing needs for food security. Beneficiation of this waste has both economic and environmental impacts that can be overcome via implementation of cleaner production technologies. Starch is a renewable biopolymer material which is completely biodegradable, easy to handle and widely available in nature. It has wide applications in various industries including food processing, pharmaceutical, confection, beverage, pulp and paper, chemical, cosmetic, binder and adhesive, packaging and printing, fermentation and textile industries. We have previously demonstrated that high-quality industrial-grade starch can be extracted from waste avocado seeds. This report is focussed on a techno-economic evaluation of the extraction process. It can be concluded, from the study that extraction of starch from waste avocado seeds is economically feasible with an accounting rate of return of 75% and a break-even analysis of 82% with a payback period of 2 years. The process is environmentally sustainable in that minimal amounts of chemicals are used in the extraction process and the wastes generated can be beneficiated into high-value products that can add further to the profitability of the venture.