

Valorisation of mango seed via extraction of starch: preliminary techno-economic analysis

Tesfaye T
Johakimu JK
Chavan RB
Sithole B
Ramjugernath D

ABSTRACT:

Reducing environmental impacts and obtaining economic benefits based on utilisation of waste materials are drivers for the implementation of cleaner production policies and technologies in food processing industries. Starch is a very versatile material with a wide range of applications in the food, pharmaceutical, textile, paper, cosmetic and construction industries. In Ethiopia, starch is widely used in the textile industry. To meet the starch demand, the country imports approximately 45% of the starch used in the country. Consequently, it is imperative to find additional sources of starch that could substitute for the amount of starch that is currently being imported. Mango seeds, a waste material that is disposed of after consumption of mangos, were studied for potential use as an alternative resource for starch production. The results showed that starch extraction from mango seeds was facile and a good quality product was obtained. The present study is concerned with a techno-economic analysis for industrial production of starch from mango seeds. The study shows that extraction of starch from waste mango seeds is feasible: the project is financially viable with an accounting rate of return of 83% and a breakeven analysis of 78% with a payback period of 2 years.