BIOWASTE REDUCTION

Packaging from passion fruit

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Yellow passion fruit (*Passiflora edulis*) is grown to produce pulp for juice, food and cosmetics. However, the fruits are more than 60% rinds and seeds, and these by-products are generally treated as processing waste. This waste can be partially used by extracting pectin, linoleic acid or other products. Alternatively, more waste can be used to produce food packaging films, which can replace fossil fuel-based plastics. Similar films have been developed previously using potatoes, pureed bruised fruits, and even flour from passion fruit rinds. However, scaled-up rind processing has been limited.

Davi Munhoz and colleagues from the National Nanotechnology Laboratory for Agribusiness and the Federal University of Sao Carlos in Brazil used continuous casting to produce translucent films. They prepared yellow passion fruit rind flour and added pectin, which is naturally present within the rinds, as a matrix-forming agent. To maintain the film's yellow colour, the temperature was limited to 120 °C. During continuous production, they achieved a productivity of 0.03 m² of film per minute. They produced films containing 50% rind content with a mechanical strength comparable to traditional polyvinyl chloride cling film. This film can reduce waste, and it is renewable and biodegradable.

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