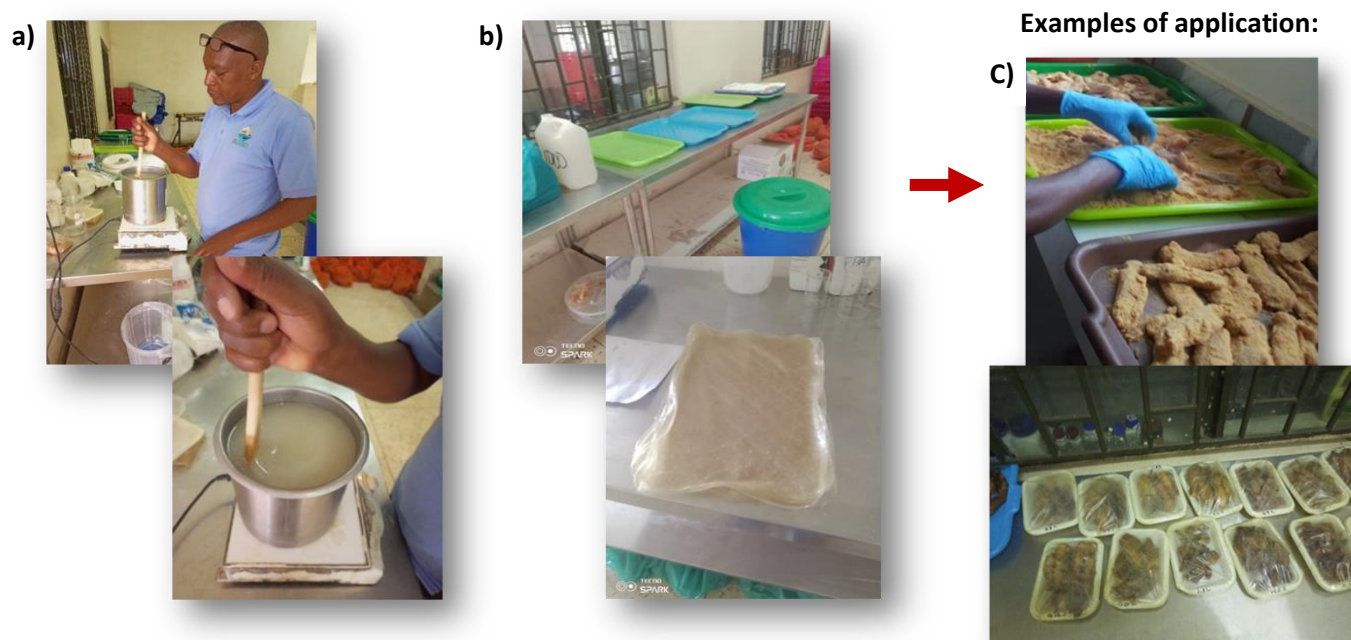


## PRACTICE ABSTRACT n° 54

### Bio-based packaging: cassava starch- and chitosan-based edible coating and film

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- Sustainable food packaging solutions (edible coating and film) were developed using a bio-based material derived from **chitosan** and locally sourced agricultural raw materials such as **cassava tuber** (bitter varieties: e.g. *Magana*).
- The **cassava starch** was extracted by a **wet process**, while the **chitosan** extracted from shrimp shells was purchased.
- **Chitosan** and **glycerol** were added to the **cassava starch** to obtain the “**film-forming dispersion**”.



Operative procedure for the preparation of the film-forming dispersion:

- 1) disperse 1 g of **chitosan** in 100 mL of distilled water (1%, w/w) and add 1 mL glacial acetic acid (1%, v/v) and stir at 300 rpm for 2 h
- 2) filter the suspension through cheesecloth to remove the undissolved chitosan
- 3) add 3 g of **cassava starch** and 0.9 g of **glycerol** to the chitosan solution
- 4) stir at 300 rpm and 80 °C until completely gelatinisation.

For **edible coating** (a):

cool the solution to about 40 °C and use it to coat food product by dipping.

For **film** (b):

cool the solution and cast 500 mL onto a 0.1 m<sup>2</sup> tray

dry the film in an oven at 45 °C for 8-10 h and remove it from the tray.

- The bio-based edible coating and the film were used, alone or in combination, for the packaging of **soft-smoked fish fillets** and **deep-fried fish fingers** (c).