

## **Prediction of sugarcane quality from juice samples using portable spectroscopy**

### **ABSTRACT**

Rapid determination of sugarcane quality using low-cost and portable equipment is more practical for field use. Thus, this study explored the potential application of a portable visible and shortwave near infrared spectroradiometer (VNIRS) to predict pol and brix from sugarcane juice samples. A total of 100 sugarcane juice samples for each clear and raw juice samples were assessed. The spectral data were collected by scanning the juice samples in a cuvette with 10 mm path length using transmittance mode. Partial least squares (PLS) and principal component analysis (PCA) were applied to interpret the spectra and develop both calibration and prediction models. The prediction performances for the clear juice samples were good with coefficient of determination ( $R^2$ ) values of pol and brix were 0.85 and 0.84, respectively. For the raw juice samples, the prediction performances were acceptable with  $R^2$  values for pol and brix were 0.73 and 0.74, respectively. Based on these results, it was concluded that the VNIRS combined with PLS models could be applied to predict sugarcane quality from both clear and raw sugarcane juices.

**Keyword:** VNIRS; Spectroscopy; Sugarcane; Quality; Juice samples