VARIETAL DISCRIMINATION OF COCONUT USING DEEP LEARNING ALGORITHMS: A UV-VIS SPECTROPHOTOMETRY APPROACH

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INTRODUCTION

- Coconut (*Cocos nucifera Linnaeus*) drupe is a fruit with an outer fleshy part surrounding a pit of hardened endocarp with a seed inside(Appaiah et al.,2014)
- Cultivar variation affects quality of nut water and kernel of tender coconut (Abdul and Zafar Iqbal, 2011)
- The need for a rapid and reliable technique which can classify various coconut cultivars

OBJECTIVE

- To assess and compare some physicochemical properties of the cultivars
- To develop classification and predictive models for the cultivars

MATERIALS AND METHODS

MATERIALS

- Cultivars were obtained from CSIR-OPRI, Kade-Ghana

Cracking and deshelling of coconut varieties

Spectra acquisition of coconut varieties

Physicochemical analysis (pH, Brix, TTA)

Data Analysis

Physicochemical Analysis	• Genstat 12th Edition
Spectra	• Chemometric, RStudio

RESULTS AND DISCUSSION

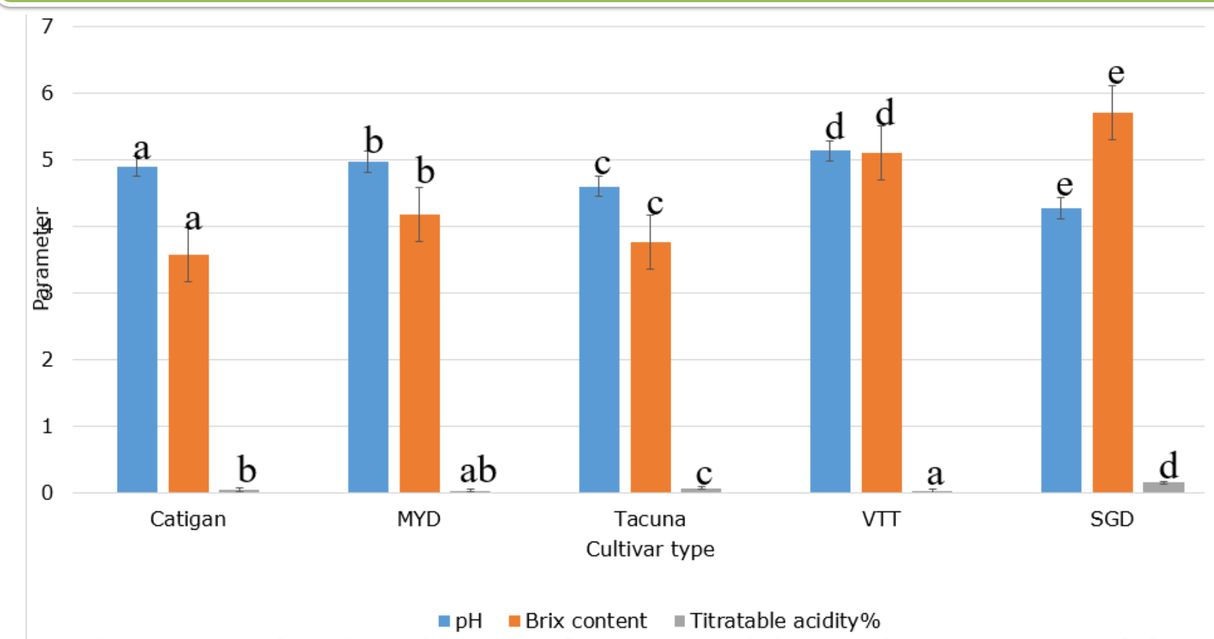

Figure 1 Physicochemical composition of coconut cultivars

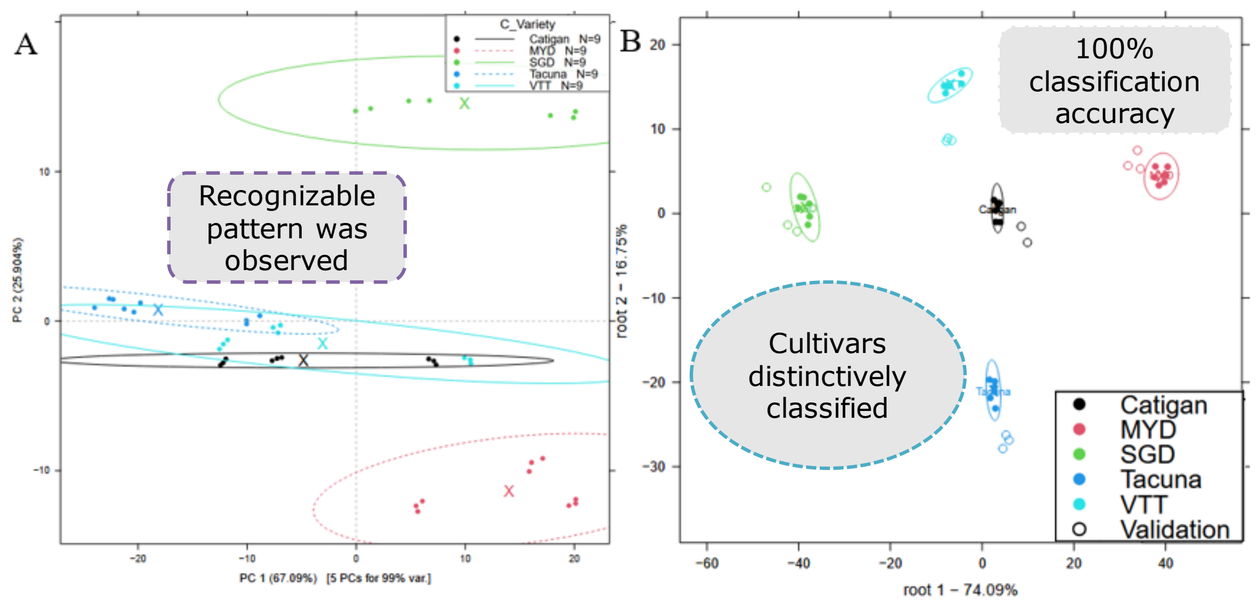

Figure 1 (A) Principal Component Analysis (B) Linear Discriminant plot of cultivars

Table 1 Partial least square regression analysis of cultivars

Parameter	R^2	RMSE(%w/w)	R^2CV	RMSECV
Total soluble solids	0.99	0.08	0.87	0.29
Titratable acidity	0.94	0.01	0.87	0.02
pH	0.94	0.07	0.89	0.10

CONCLUSION

- The cultivar type had an influence on the physicochemical parameters
- PCA visualize and recognize patterns with respect to the different cultivars, (LDA) classify the various cultivars with high interclass distances and PLSR was robust in predicting the various physicochemical parameters
- UV-VIS spectroscopy is an efficient analytical technique in classifying coconut varieties

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