The drumstick tree has traditionally been used as foodstuff and fodder in several countries. Due to its high nutritional value and good biomass production, interest in this plant has increased in recent years. It has therefore become important to rapidly and accurately evaluate drumstick quality. In this study, we addressed the optimization of Near-infrared spectroscopy (NIRS) to analyze crude protein, crude fat, crude fiber, iron (Fe), and potassium (K) in a variety of drumstick accessions ($N = 111$) representing different populations, cultivation programs, and climates. Partial least-squares regression with internal cross-validation was used to evaluate the models and identify possible spectral outliers. The calibration statistics for these fodder-related chemical components suggest that NIRS can predict these parameters in a wide range of drumstick types with high accuracy. The NIRS calibration models developed in this study will be useful in predicting drumstick forage quality for these five quality parameters.

Scatter plot of nutrient (A. crude protein, B. crude fat, C. crude fiber, D. K, E. Fe) content measured by chemical way and predicted by the calibration equations obtained by NIR.