

✓ **MOISTURE CONTENT DETERMINATION OF DIFFERENT COFFEE
VARIETIES USING NEAR INFRARED (NIR) DEVICE**

Undergraduate Thesis
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College of Engineering and Information Technology
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ABSTRACT

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The study was conducted from August 2014 to January 2015 in the College of Engineering and Information Technology and Soil and Water Laboratory of the College of Agriculture, Forestry, Environment and Natural Resources to determine the moisture content of different coffee varieties using near infrared (NIR) device. Specifically, the study aimed to: establish the relationship of moisture content and drying time using oven-drying method; show the spectral signature or behavior of different coffee varieties at various drying stage; determine the relationship between spectral signature and moisture content of the coffee bean samples; determine an appropriate multivariate calibration model to predict the moisture content of different coffee varieties; and evaluate the validity of the multivariate calibration model.

Fresh, clean and green beans of Arabica, Excelsa, Liberica and Robusta were used in the study with 80 samples for every variety. The developed NIR device of the CvSU-DOST NIR Project was utilized in the study. The multivariate calibration models were obtained using R program with R-squared values of 0.945 for Arabica, 0.982 for Excelsa, 0.973 for Liberica and 0.989 for Robusta. With the results of the test prediction, the RMSEP values for Arabica, Excelsa, Liberica and Robusta were 1.34, 1.58, 1.48 and 1.37, respectively.