

Principal Component Regression in Amylose Content on the Malaysian Market Rice Grains Using Near Infrared Reflectance Spectroscopy

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Abstract : The amylose content is an essential element in determining the texture and taste of rice grains. This paper evaluates the use of VIS-SWNIRS in estimating the amylose content for seven varieties of rice grains available in the Malaysian market. Each type consists of 30 samples and all the samples are scanned using the spectroscopy to obtain a range of values between 680-1000nm. The Savitzky-Golay (SG) smoothing filter is applied to each sample's data before the Principal Component Regression (PCR) technique is used to examine the data and produce a single value for each sample. This value is then compared with reference values obtained from the standard iodine colorimetric test in terms of its coefficient of determination, R². Results show that this technique produced low R² values of less than 0.50. In order to improve the result, the range should include a wavelength range of 1100-2500nm and the number of samples processed should also be increased.

Keywords : amylose content, diffuse reflectance, Malaysia rice grain, principal component regression (PCR), Visible and Shortwave near-infrared spectroscopy (VIS-SWNIRS)

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