

Evaluation of the Internal Quality for Pineapple Based on the Spectroscopy Approach and Neural Network

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Abstract : In Thailand, once pineapples are harvested, they must be classified into two classes based on their sweetness: sweet and unsweet. This paper has studied and developed the assessment of internal quality of pineapples using a low-cost compact spectroscopy sensor according to the Spectroscopy approach and Neural Network (NN). During the experiments, Batavia pineapples were utilized, generating 100 samples. The extracted pineapple juice of each sample was used to determine the Soluble Solid Content (SSC) labeling into sweet and unsweet classes. In terms of experimental equipment, the sensor cover was specifically designed to install the sensor and light source to read the reflectance at a five mm depth from pineapple flesh. By using a spectroscopy sensor, data on visible and near-infrared reflectance (Vis-NIR) were collected. The NN was used to classify the pineapple classes. Before the classification step, the preprocessing methods, which are Class balancing, Data shuffling, and Standardization were applied. The 510 nm and 900 nm reflectance values of the middle parts of pineapples were used as features of the NN. With the Sequential model and Relu activation function, 100% accuracy of the training set and 76.67% accuracy of the test set were achieved. According to the abovementioned information, using a low-cost compact spectroscopy sensor has achieved favorable results in classifying the sweetness of the two classes of pineapples.

Keywords : neural network, pineapple, soluble solid content, spectroscopy

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