

ABSTRACT

Manual grading of melons is often inconsistent, time-consuming, and increases labor costs, thereby reducing post-harvest efficiency. This research aims to develop an automated grading system to classify the quality of Inthanon melons based on texture and color analysis. Texture analysis uses Gray Level Co-occurrence Matrix (GLCM) to extract seven key features, while color analysis uses CIELab color space (a^ and b^* channels) with additional Hue and Chroma parameters. The dataset consists of 300 melon images with image acquisition performed in a controlled treatment. The poor and good quality Inthanon Melon datasets were augmented with 14 corners for training data of the augmentation model. The classification process was performed in two stages using Support Vector Machine (SVM), namely for the classification of melon type (Net/Non-Net) and then melon quality (Good/Bad). The color and texture features proved to be accurate and efficient in classifying the quality of Inthanon Melons with the accuracy results on the melon type classification model of 100%, the inthanon quality classification model without augmentation of 95%, and the augmentation model getting a lower accuracy than the model without augmentation which is 87.5%. These findings demonstrate the effectiveness of the proposed method and automate the classification of Inthanon Melon quality.*

Key Words: Automatic Grading, CIELab, GLCM, Inthanon Melon, SVM