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Determination of weight and color in Agraz during the storage period with near infrared spectroscopy

Andrea Katherin Carranza Diaz, Nathalia Forero-Cabrera, Yelena Gomez-Lara, Laura Mila-Saavedra, Andres Silva-Dimate and Carolina Sanchez-Saenz
National University of Colombia, Colombia

64% of fruit and vegetable losses occur in the post-harvest and industrial processing stages. To determine the quality of the product, destructive methods are frequently used. Near-infrared spectroscopy (NIR) is a technology considered as a non-destructive alternative for the determination of quality and maturation indices. Agraz (*Vaccinium meridionale* Swartz) known as Colombian wild blueberry, is a plant belonging to the family Ericaceae, considered an essential fruit for its antioxidant values, however, no spectroscopic studies are reported for determination of quality parameters. The aim of this work was to calibrate and validate models for prediction of weight and color in agraz during its storage period with NIR spectroscopy. Vegetative material came from the municipality of San Miguel de Sema, Boyacá, Colombia; agraz was harvested at maturity stage 3 and selected according to its phytosanitary state. It was stored for 21 days at room temperature ($18^{\circ}\text{C} \pm 0.5$ and $60\% \text{ RH} \pm 0.5$) and weight changes and color (CIELAB L^* a^* b^*) of 100 samples of $15 \text{ g} \pm 0.2 \text{ g}$ of product were monitored. 300 samples for calibration and 100 for external validation were used. For the elaboration of the models, PLSR was used and cross-validation was performed and for their evaluation R^2 , RMSE, RPD were considered as criteria. Good representation models were obtained for weight an R^2 of 0.76 and 0.072 RPD. For color, acceptable models, a^* coordinate with RPD 1.53 for b^* coordinate models rated average prediction (R^2 0.41) and in the case of the coordinate L^* is obtained a model with poor predictive capacity. The results indicate that the spectral models can be used as tools of classification and measurement of weight and color with some precision in the coordinates a^* and b^* , however, it is necessary to improve the models.

Biography

Andrea Katherin Carranza Diaz is a Bachelor student from National University of Colombia, Colombia. Her research interests include Postharvest of agricultural products and soil sciences.

akcarranzad@unal.edu.co.

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