Harvest time affects quality and storability of kiwifruit (*Actinidia* spp.): Cultivars during long-term cool storage

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Abstract

This work aimed to predict mass (weight) and shape ratio (format) of yellow melon through computer vision techniques (VC). To do this, a digital camera was used to take pictures of all melons (n=135). The images processing consisted in filtering colors in the RGB space, thresholding by Otsu's method and, finally, detection of melon's contours. The used processing techniques were sufficient to separate the melon from the image background, allowing calculating the area of the melon (A_{melon}), in both square pixel ($pixel^2$) or square centimeters (cm^2), which showed very strong Pearson's correlation (0.993**). By using area-based linear regressions, it was possible to predict the weight of the melon in kilograms, from A_{melon} in $pixel^2$ (Pearson's correlation = 0.993**) or cm^2 (0.989**). The shape ratio (SR) has estimated based on melon's diameters (L - longitudinal and T - transversal), which were obtained using pachymeter (real) or computer vision (CV). Based on real data set (pachymeter), melons were classified by SR into four groups, considered as reference. The based-CV algorithm was able to classify the same melons in the same groups with hit percentage of 96%. The correlation between the product of the multiplication of both diameters (L_{cv}*T_{cv}) and the melon area (A_{melon}, $pixel^2$) was very strong (0.9987**), and the coefficient of calibration of 93 pixels per centimeter presented a good fit. Based on these two results, the weight, in kilograms, and both diameters, in centimeters, were predicted from the measurements of L and T, in pixel, obtained by computer vision.