

Dear colleague:

We have put an effort to make this database available for you. If you use this database for your work, please cite the references or acknowledge the COFILAB team (www.cofilab.com). These samples are mangos cv. 'Kent' in different maturity stages. A reference to the acquisition system can be found in:

Vidal A, Talens P, Prats-Montalbán JM, Cubero S, Albert F, Blasco J (2013) In-line estimation of the standard colour index of citrus fruits using a computer vision system developed for a mobile platform. *Food and Bioprocess Technology*, 6(12), 3412-3419. DOI: 10.1007/s11947-012-1015-2.

Cubero S, Diago MP, Blasco J, Tardaguila J, Millán B, Aleixos N (2014) A new method for pedicel/peduncle detection and size assessment of grapevine berries and other fruits by image analysis. *Biosystems Engineering. Special Issue on Image Processing in Agriculture*, 117, 62-72. DOI: 10.1016/j.biosystemseng.2013.06.007.

The image acquisition system was composed of a digital camera (EOS 550D, Canon Inc., Japan) used to acquire high quality images with a size of 5184 x 3456 pixels and a resolution of 0.03 mm/pixel. Please note that images for download in the database have been reduced to a size of 1200 x 800 pixels to reduce storage requirements, if you want to download the original images just send us a message using the form in the download page. The images were taken by placing each sample inside an inspection chamber in which contained the camera and the lighting system. The camera was placed at a distance of 20 cm from the samples. Illumination was achieved using four lamps that contained two fluorescent tubes each (Biolux L18W/965, 6500 K, Osram AG, Germany). The angle between the axis of the lens and the sources of illumination was of approximately 45° since the diffuse reflection responsible for the colour occurs at 45° from the incident light. However, the samples have a curved shape that can still produce bright spots affecting the colour measurements. To minimise the impact of these specular reflections cross polarisation was used by placing polarising filters in front of the lamps and in the camera lenses. The fluorescent tubes were powered using high frequency electronic ballast to avoid the flickering effect of the alternate current and produce a more stable light. Two images of each mango were taken (A and B) from both sides. The mangos were also weighted (weight.xlsx). Figure 1 shows the vision system used to acquire the images.



Figure 1. Inspection chamber used to capture the images

The application EOS utility (Canon Inc, Japan) was used to capture the images of the fruit. This software allows tuning all the camera parameters like the ISO, shutter speed or resolution as well as capturing the images without handling the camera. The settings of the camera used for the acquisition are summarized in table 1. A standardised colour checker (ColorChecker SG Chart, X-Rite Inc, USA) was used to acquire colour references. Images of fruit were stored in JPG format due to internet limitations but images of colour checker were captured in both JPG and RAW (CR2) format to check the quality loss due to JPG compression. The results of the analysis of the colour patches in different colour spaces were completely the same with a correlation R^2 higher than 99.9%

Table 1: settings of the camera

X Resolution	72 inch
Y Resolution	72 inch
Exposure time [s]	1/4
F-Number	22.0
ISO speed ratings	800
Shutter speed [s]	1/4
Aperture	F22.6
Flash	No flash
Focal length [mm]	35
Colour space	sRGB
Compression setting	Fine
White balance	Cloudy