

Optimal operating conditions for an optical ring sensor system to size fruits and vegetables

Moreda, Guillermo P.

Ortiz-Cañavate, Jaime

García-Ramos, Francisco J.

Homer, Ian R.

Ruiz-Altisent, Margarita

This work reports on the determination of the optimal operating conditions for an optical ring sensor system as a first step in its use for fruits and vegetable sizing. The system was comprised of a singulator which fed two types of calibrated models to the optical ring sensor. The optical ring sensor is an electro-optical device that, based on the blocking of light, measures the size of the objects that pass through it. The operating conditions analyzed were the passage zone and the speed, and the calibrated models used were truncated spheres and elongated cylinders. The size features measured were volume, length, and major and minor axes of the largest cross section. The optimal combinations of position and speed for measurements of major axis and volume were determined with the truncated spheres. In major axis determination of the smaller truncated spheres the eccentric passage zones were preferable to the centric passage zones. The reliability (accuracy and precision) of minor axis