

Title            Optical method for fruit surface irregularity measurement  
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Citation        2005 ASAE Annual International Meeting, Tampa Convention Center, Tampa, Florida, 17-20 July  
                    2005, Paper Number 056193, 8 p.  
Keywords       Fruit; surface; irregularity; optical

### **Abstract**

The objective of the work reported herein was to develop optical methods for the non-contact measurement of apple surface irregularities. Furthermore, the objective was to determine the goodness of the methods and to compare the optical methods to surface scanning with a computer controlled mechanical sensor. Apple surface irregularities were studied by two optical methods developed for the purpose and used to determine the variations in the surface irregularities in the function of the apple mass reduction. The method based on the change in the black to white area ratio of the surface showed an exponential relationship of close correlation between the mentioned ratio and the reduction in the mass for the three apple samples. This ratio was compared to the surface irregularities measured by mechanical method by the means of a Perthometer. This can be the basis of a calibration procedure for the optical method to express the actual height of the irregularities.