Abstract

The potentials of a hyperspectral imaging system were investigated for early detection of bruises on 'McIntosh' apples. A hyperspectral imaging system was developed based on a spectral region between 400 and 1000 nm. Partial least squares method and stepwise discrimination analysis were used for data dimensionality reduction and selecting the effective wavelengths. Three effective wavelengths in the near infrared region (750, 820, 960 nm) were selected to realize multispectral imaging tests. The classification results indicated that the bruised apples were successfully distinguished from the sound apples. The accuracy of the system is superior to detect bruise after 1 h of bruising.