Abstract

The presence of one fruit infected with citrus canker in a shipment may render the whole shipment unmarketable. Therefore it is important to classify fruit infected with citrus canker in the packinghouse before shipping the produce. The purpose of this research was to determine the significant wavelengths that could be used to classify canker among other peel conditions using grapefruit, a variety susceptible to canker. A spectrophotometer, with a wavelength range of 200–2500 nm, was used to measure the spectral reflectance data of peels from market quality fruit and fruits that were infected with cake melanose, wind scar, copper burn, greasy spot and canker. Statistical data analysis was performed on the spectral reflectance data to identify the wavelengths that had maximum discriminatory potential among the different peel conditions and to derive a discriminant function from the identified wavelengths. The discriminatory wavelengths were identified in the visible and the visible near infrared range. In addition, the classification based on the derived discriminant function resulted in 100% classification of canker. These results provide fundamental and practical use in the development of an automatic fruit sorter for canker classification based on spectral reflectance. Future research would involve the development of a vision-based classification system using the significant wavelengths identified in this study.