

Applications of imaging and spectroscopy techniques for non-destructive quality evaluation of potatoes and sweet potatoes: a review

ABSTRACT

Potato and sweet potato are two among the most important commodities worldwide due to their significant role in human diet and food security. As highly demanded crops, rapid quality monitoring methods prior to marketing, processing, and other post-harvest activities are the major concerns of consumers and food processors. The non-destructive techniques in terms of imaging and spectroscopy have become effective analytical tools in evaluating the quality of various horticultural and food products including potatoes and sweet potatoes. Hence, this paper reports the current knowledge on the recent applications of imaging and spectroscopy for inspecting the quality and safety of raw potato and sweet potato tubers. In this comprehensive review, the conventional quality evaluation (internal and external) are discussed, followed by description of imaging and spectroscopy as non-destructive techniques and, the summary of the recent successful implementations of these tools in relation to quality evaluation. The basic and fundamental components of the technique, measurement methods and data analysis applied, advantages, and challenges are also critically reviewed.

Keyword: Imaging; Spectroscopy; Potato; Sweet potato; Quality evaluation