

# Progress in proteomic profiling of horticultural commodities during postharvest handling and storage: A review

Patricia M. K. Mathabe, Zinash A. Belay, Thulile Ndlovu and Oluwafemi J. Caleb

Scientia Horticulturae 261: 108996. (2020)

---

## Abstract

Abiotic and biotic stresses in horticultural commodities during postharvest handling and storage can result in changes in protein regulation and accumulation, and under sub-optimal conditions the changes could accelerate fruit physiological disorders and fruit quality degradation. Thus, it is essential to constantly optimize postharvest handling and storage conditions that could maintain fresh produce. Hence, understanding the role of various protein level responses and mechanisms linked to the responses for accurate characterization of physiological observations is crucial. In light of the limitations of molecular or metabolomics-based tools such as their inability to reveal post-translational modifications, an overview on the status of proteomic tools available and progress made in application for postharvest research is presented. The intent of this review was to demonstrate that proteomics research can provide guidance for all the role players along the postharvest value chain through – (a) ensuring identification and validation of biomarkers associated with specific quality and abiotic stress response, (b) the use of protein markers in the development of appropriate postharvest handling and storage tools to circumvent any emerging hurdles along the postharvest value chain, (c) the profiling of markers, which will allow targeted cultivar development, and (d) the identification of early postharvest physiological disorder and development of pathogen recognition tools.