AHS Vol. 34 No. 1S (2020): Special issue on "Postharvest"

Foreword

A significant portion of this special issue of *Advances in Horticultural Science* focuses on stress physiology, highlighting the delicate redox balance and oxidative responses that underlie visible disorders such as browning, texture loss, or chilling injury. The study on 'Pomella Genovese' apples, for example, moves beyond superficial symptoms to suggest a metabolic basis for tissue breakdown, aligning with broader efforts to decode the biochemical signatures of postharvest decline. This molecular framing invites further consideration about the usefulness of oxidative stress markers as early predictors of shelf-life limits, and about their potential role to tailor cultivar-specific handling strategies.
Several papers explore modified atmosphere and active packaging as tools not only for extending shelf life but also for actively shaping the biochemical and sensory properties of fruits like tomatoes, Goji berries, and wine grapes. These findings suggest that packaging is no longer a passive barrier but an interface through which we may influence metabolite dynamics, such as volatiles and antioxidants. However, this potential raises new questions: how do we balance atmosphere optimization with energy costs, plastic use, and broader sustainability goals?

The issue also expands into non-traditional horticultural products, such as edible flowers, which offer high value and visual appeal but pose challenges in terms of perishability and phytochemical stability. Here again, postharvest science is called upon to mediate between market trends and biological limitations.

Several studies contribute to a wider conversation on resource recovery and low-impact innovation, including the use of food industry by-products for functional compounds, and the application of non-destructive spectroscopy for internal quality evaluation. These efforts align with a growing consensus that postharvest science must do more than preserve: it must regenerate, anticipate, and communicate quality in ways that are measurable, efficient, and environmentally conscious.

Taken together, the works in this volume reflect a shift toward a more mechanistic and integrative postharvest approach, one that recognizes the full life cycle of a product, from field to storage, from phenotype to metabolite.

We thank all authors for their valuable contributions.