

Dynamic Controlled
Atmosphere Storage:
A paradigm shift in
postharvest science

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Registration link:
https://us02web.zoom.us/webinar/register/WN_tIH6Wy6wT2mJJq_v-DLC8g



The International Society for Horticultural Science invites you to the fourth episode of Hort Forum:

**Dynamic Controlled Atmosphere Storage:
A paradigm shift in postharvest science**

Speaker: Angelo Zanella,
Research Centre Laimburg, Ora, Italy

Abstract

The landscape of postharvest storage technology is experiencing a paradigm shift, marked by advancements in controlled atmosphere (CA) storage for horticultural products. Extending the postharvest lifespan of certain horticultural products, achieved through optimal cooling procedures, can be enhanced by adjusting the storage atmosphere to a 'so called' optimal composition, based on empirically determined values set consistently for the entire storage duration. Evolution has progressed from static to dynamic CA (DCA) conditions, adapting specifically to the unique requirements of different fruit. Recent developments in sensor technologies capable of monitoring physiological responses to hypoxia have paved the way for exploration beyond traditional oxygen thresholds, promising enhanced quality and extended marketing potential for horticultural products. Notably, the reduction of oxygen levels to extremes has shown efficacy in preventing physiological disorders such as superficial scald, rendering the use of postharvest treatments such as diphenylamine (DPA) obsolete. It has been critical to validate bio-sensing technologies for the determination of the Lowest Oxygen Limit (LOL) in order to enable the customization of atmosphere composition based on specific fruit requirements, including cultivar variations, pedo-climatic factors, and agronomic conditions throughout the storage phase. Ethanol sensors and the availability of fluorescence sensors have played pivotal roles in achieving DCA. The introduction of Respiratory Quotient (RQ), later coupled with CO₂-rate, sensing has raised expectations for further advancements, such as the fusion of sensor information, integration with artificial intelligence (AI), and the development of new sensors for monitoring chilling and carbon dioxide levels. While DCA has proven successful in many practical applications, the challenges lie in navigating the post-DCA phase, especially in reaching distant or complex markets. Overcoming these challenges necessitates the integration of comprehensive know-how and specialized equipment.



Short Bio

Angelo Zanella is a dedicated researcher and professional currently holding positions at the Research Centre Laimburg (Italy) as head of the Institute for Mountain Agriculture and Food Technology and as leader of the Research Group for Storage and Postharvest Biology, furthermore he is lecturer in the latter field at the Free University of Bolzano. He was educated in both the Italian and German spheres. University study of Biology in Austria (PhD) led to specialization in microbial physiology, especially in biohydrometallurgical processes, involving him in several research projects and university teaching activity. His research focus in the last two decades is in the domain of advanced postharvest technologies, including preharvest management, investigating the effects on postharvest physiology, disease control and quality, furthermore on innovations in quality evaluation and non-destructive testing of horticultural products. He participates actively in national and international projects addressing critical issues on the intersection of new technologies. For many years chair of the working group Postharvest Quality within EUFRIN. He contributes to the academic and professional discourse with numerous publications in scientific and professional journals.

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