

Title Progressive challenges in horticultural supply chains: some future challenges
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Abstract

To meet the increasingly complex demands of global supermarkets, future successful horticultural sectors must utilise new enabling technologies currently being developed and becoming available. Genetic technology, nanotechnology and information technology is a triad of technologies driving change in supply chains world wide. Miniature sensors within products or loads, transmitting signals via satellite to a home base, will monitor real time variations in product state and environment, allowing action to avert undue stress and quality deterioration to plants and products both pre and postharvest. Genetic technology will create new plant forms, functions and composition, enabling desirable attributes to be incorporated into food to meet consumer needs, including specific health conferring attributes that will selectively enhance personal performance criteria based on age or vocation. Product variability will be reduced through improved seed and plant selection and breeding, by management utilising physiological knowledge, and by fast, accurate and consistent postharvest sorting and packing systems. Postharvest deterioration will be reduced within supply chains by controlling physiological processes, such as ethylene biosynthesis or action, that contribute to senescence. Traceability will become more important and the 'tool box' provided by the information and computer revolution will allow faster, more accurate identification of products throughout the entire supply chain. RFID (radio frequency identification) will become the norm as a convergence of broadband, wireless and handheld multifunctional devices allow instant communication globally. Transport modalities will change with new and faster transport networks being developed, including the Trans Asian railway from East and South Asia to Western Asia and Europe, the new generation of super large planes, (Airbus 380), and fast ships with 7 day point to point delivery from Chicago to Frankfurt. Nanotechnologies linked with the information and computer and genetic technologies, will provide a new revolution for agriculture and horticulture in the 21st century. Applications for sensing of environment, product, and location will become the norm; new types of interactive and modulating packaging will be available that interact with sensors and miniature machines that will manipulate control systems to ensure quality is maintained through the supply chain. Smaller, faster, smarter and more flexible will be the motto for successful 21st century companies; those supply chains that do not confront the challenge and adopt these technologies, will not survive.