

## **Abstract**

In recent years much progress has been made in modelling quality changes of perishable products as a function of the environmental conditions to which they are exposed. Key determinants of quality such as firmness, mass loss and colour have proved amenable to description by relatively simple unstructured equations that permit different product storage and distribution histories to be evaluated for their influence on out-turn quality. Increasingly, attention is being given to how the influences of pre-harvest factors and biological variability can be incorporated into these quality models. This work has parallels in food processing where predictive modelling of the growth of food pathogens and modelling of food quality have become routine tools used in the development of food safety programmes and for aiding the development of new processing and preservation regimes. More generally, as quality is a complex concept with many different meanings to different 'players' in the product value chain, there is a need to develop integrated models to evaluate alternative supply chain scenarios for different kinds and weighting, of quality criteria. By this means it may be possible to identify particular strengths or vulnerabilities within the chain for a given product and to suggest ways by which the chain could be optimised. Drawing on recent research at Massey University and the literature, this paper examines some approaches to developing integrated models for fresh produce.