Abstract

Grading charts are widely used to assign quality ratings to fresh products. Typically the product sample is compared with a series of photographs illustrating the progressive change in the quality attribute and a numerical rating is assigned to the sample. Such grading charts have many advantages: they are cheap, robust and suitable for use throughout local or global supply chains, non-destructive, require no calibration, and are not sensitive to differences in instrumentation systems as can occur with objective quality measurements. Conversely, they are subjective and generally lack precision. Limes (*Citrus latifolia* Tanaka) are an attractive fruit crop but generally suffer a loss in value as their colour changes from green to yellow. Various approaches can be taken to slow degreening including low temperature storage, use of controlled or modified atmosphere environments and treatment of fruit with physiologically active agents such as gibberellic acid (GA_3) or 1-MCP. In this paper the effects of temperature on degreening kinetics of limes grown New Zealand are reported, as determined by use of a colour score based on a grading chart. Lime fruit were harvested mid-and late-season in 2004 and mid-season in 2005 from orchards in Northland and the Bay of Plenty, NZ. Fruit were randomly placed in treatment groups and each fruit in a group was assigned a score of 0, 25, 50, 75 or 100% yellow according to a pre-prepared grading chart. Fruit were stored under various temperature and atmosphere regimes and were regimes and were regularly assessed for colour score. An average score for each treatment sample was calculated at each sample time and a logistic equation was fitted to these data. The fit of the model was adequate. The influence of temperature on the apparent rate constant was modeled using the Arrhenius equation and the activation energy (E_A) for degreening during air storage was estimated to be -75 $kJ.mol^{-1}$.