

Title Kiwifruit softening: comprehensive research approach in Chile and relevant results
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Abstract

Early softening is the main problem for the exports of Chilean kiwifruit. It has been related to orchard, harvest and postharvest factors. Therefore, a 4-year project is being carried out to study the problem comprehensively, to determine the main factors involved and the possibilities of predicting and controlling it. Experiments were carried out to determine the influence of growing conditions and the most important fruit characteristics on the softening rate of kiwifruit cultivated in different areas throughout Chile. Different postharvest handling techniques were evaluated to identify critical points along the entire production and postharvest chain. Fruit from all orchards were harvested at 6.2–6.5% soluble solids content (excepting fruit for maturity effects), and kept under the same storage condition (0°C, air). Samples were taken every fifteen days to determine softening propensity by measuring the number of days elapsing until fruit reached 18N firmness. Results so far indicate that softening behaviour of kiwifruit can be affected by light exposure, plant vigour and nutrition, fruit characteristics and position on the plant. Canopy management, water availability and Ca applications were also studied. Maintaining fruit firmness is assisted by vine management that ensures moderate vigour, adequate exposure of the plant and fruit to light, reduction of competition between fruit and vegetative growth and Ca applications to the fruit. Larger fruit size, time of harvest and position on the vine are also important characteristics. In addition, postharvest handling has been critically analysed and some limitations have been identified as a source of difficulties for Chilean kiwifruit that can be overcome through specific measures such as temperature management, controlled atmosphere and decay control, as well as control of ethylene. Using the results obtained a mathematical model to forecast early kiwifruit softening is being developed.