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Abstract

The harvesting of citrus fruit represents 35–45% of total production cost. Hence, an improvement in the efficiency of this one operation has a significant effect upon enterprise viability and profitability. The traditional manual harvesting method is very labour intensive, and thus expensive.

Mechanical harvesting methods have been widely researched and significantly improved. This is illustrated by the large amount of research data available and reviewed in this paper. The performances of the air shaking, trunk shaking, limb shaking and canopy shaking mechanical harvesting systems are briefly summarised. The results of several tree shaping and orchard layout studies have been included because the operating environment of the mechanical harvester affects its performance. The research results show that maximum harvester performance and maximum orchard productivity are not necessarily mutually exclusive, the correct choices of harvesting system and orchard layout can optimise both aspects.

Quality fruit selection is very desirable because it achieves the maximum fruit price through the supply of the highest-quality fruit. This review has found that none of the mechanical systems investigated have matched the high-quality selection ability of manual pickers. Hence, this review also includes the results of research into alternative methods of maximising manual picker productivity in order to minimise the cost of manual picking.