

Title Agricultural supply system traceability, Part II: Implications of packhouse processing transformations

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Abstract

Traceability is becoming an integral requirement of modern supply chains. Until recently there has been little need for accepted measures to offer of less than absolute traceability. This paper describes four such concepts for horticultural packing operations: precision of traceability; packs per bin for tracking; bins per pack for tracing; and purity to describe the likely sampling accuracy of packs in an audit or monitoring system. Three major factors influence these measures: splitting the cupstream into a number of outputs during packing; any mixing that occurs before splitting; and any mixing that occurs after splitting.

At low percentage cupstream, pack size, and packing lane mixing have marked influence over a broad range of traceability precision. Infeed mixing has a relatively minor effect. At high percentage cupstream, pack size, and packing lane mixing have minor effects and only a narrow range of traceability precision is dependent on these. Infeed mixing is the major determinate of traceability precision.

Improvements in the precision of tracing gained from a change in granularity will always have an associated counter effect on the precision of tracking. Improvements to the precision of traceability achieved through reductions in mixing or output splitting improve the precision of both tracing and tracking.

The traceability metrics investigated in the paper have broad applications in many agricultural production and supply chain systems. There is potential to implement high precision and fine granularity traceability in agricultural supply systems, which can also meet a number of other purposes such as improved feedback to producers and benefits to supply system efficiency, as well as being acceptable for compliance purposes.