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**Title: Numerical and experimental performance evaluation of ventilated packages**

**ABSTRACT**

Packaging serves a crucial role in reducing postharvest losses by protecting fresh produce during handling. This thesis provides insight into the structural performance of ventilated cartons to enhance the development of improved designs. Finite element models capable of accurately predicting the strength of cartons were developed and experimentally validated. Results showed that the performance of cartons was sensitive to the vent hole configuration and environmental conditions. Increasing the vent area and humidity and lowering the temperature increased the creep rate. This study provides empirical and numerical evidence on the efficacy of different carton designs and guidelines for improving next-generation packaging.