

Title Simulating onion packinghouse product flow for performance evaluation and education
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Abstract

Lack of information on postharvest packinghouse performance hinders exploration, assessment of improvement opportunities and education possibilities. This study evaluated the sizing and inspection performance of 3 onion packinghouses and developed a discrete event simulation model to demonstrate the impact of improving these 2 performance variables on potential sales revenue generation, as part of a larger goal to develop a methodology for bringing packinghouses into the teaching and demonstration classroom via simulation. A group of 550 fresh sweet onions from the Vidalia production region in Georgia, US were obtained from 3 packinghouses for the 2-performance variable evaluation. Results indicated significant difference ($p < 0.05$) among the 3 packinghouses in terms of sizing error rate. The major departure from homogeneity was caused by a relatively higher fraction of incorrectly sized onions in 1 packinghouse. There was no significant difference ($p > 0.05$) between the packinghouses in terms of percentage rejects in the sorted Grade 1 onions. One packinghouse failed to meet the tolerance limit for defects, as specified by the US Grade Standards. Packinghouse managers were polled to discern impact, with houses responding with major management and packing line modifications.