

Title Relation of water loss to compressive and tensile texture attributes of three chilli cultivars
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Abstract

Postharvest quality loss in stored chilli is often detectable as a change in texture, particularly when there is significant water loss. Three chilli cultivars ('Paprika' (*Capsicum annuum*), 'Jalapeno' (*C. annuum*) and 'Habanero' (*C. chinense*)) were stored in polyethylene (PE) bags at 4, 8, and 20°C. Weight loss of up to 40% was recorded for 'Paprika' stored at 20°C for 14 days, and this was accompanied by significant shrivel. Maximum weight loss of 'Jalapeno' and 'Habanero' was 25-30% after 14 days at 20°C with some symptoms of shrivel. The maximum force (firmness) during compression of a pericarp piece to 50% strain in 'Paprika' and 'Jalapeno' stored at 4°C for 14 days was higher than for chillies stored at 20°C for the same period. For 'Jalapeno' in particular, loss of firmness was proportional to water loss. In a tensile ring test, 'Paprika' and 'Habanero' showed a significant reduction in break strength (maximum force) as storage time increased with the maximum reduction for 'Paprika' occurring at 4°C. These reductions in ring test break strength were unrelated to water loss and were most severe at low temperature, suggesting it may be a physiological response to chilling. Tensile test rings of 'Jalapeno' did not show a large reduction in break strength, and instead showed an increase in maximum stress with storage time, possibly as a result of tissue shrinkage without loss of strength of load-bearing cell walls. For tensile tests of 'Jalapeno', the slope at 50% of the breakage strain on a stress-strain plot was negatively correlated with water loss suggesting there was a significant impact of turgor change on fruit texture in this thicker-walled cultivar.