

Title Assessment of precooling technologies for sweet corn
Author Patrick Cortbaoui, Clément Vigneault, Yvan Gariépy, Bernard Goyette, Vijaya G.S. Raghavan and
 Marie Thérèse Charles
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Abstract

Three cultivars of sweet corn were precooled immediately after harvest using forced-air, vacuum and hydrocooling systems. Combinations of two air flow rates, 1 and 3 L•s⁻¹•kg⁻¹ of produce, and two water flow patterns, immersed and spray, with two cob orientations, parallel and perpendicular to the medium (air or water) flow were tested. Both precooled and room cooled corn cobs were stored for 7 and 21 days at 10°C and 90-95 % RH. Half cooling time and quality attributes were measured to assess the performance of all cooling systems. Cooling time was significantly reduced with perpendicularly oriented cobs, higher air flow rate (3 L•s⁻¹•kg⁻¹) and immersed-in-water type flow.. The highest decrease in cooling time was observed with vacuum with a production of a large mass loss, followed by forced-air. On the other hand, immersed-in-water treatment resulted in better maintenance of general quality index and of higher total soluble solids and moisture content over the period of survey. The three cultivars evaluated in the present study were shown to have differences in their storage ability and quality conservation. However, the selection of one cultivar over the others, for industrial application, will be governed by consumer's preference and market supply.