Title	Use of x-ray computed tomography to study the morphology of airpaths inside grain bulks
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Abstract

X-ray computed tomography (CT) is a technique that uses X-ray images to reconstruct the internal microstructure of objects. A high resolution X-ray CT system with a resolution of 200 μm was used to scan airpaths inside grain bulks. Bulk grains of wheat and peas were scanned along horizontal and vertical directions. The X-ray CT images were analyzed to explain the airflow resistance difference along the horizontal and vertical directions of grain bulks. Total airspace, airpath distribution and size of airpaths were determined from the images. Morphological information of the airpaths from the tomographic images showed that the size and number of airpaths vary between horizontal and vertical directions of grain bulks. The number and size of airpaths were almost double along the horizontal direction than in the vertical direction for wheat. However for peas which are spherical, the airpath distribution and their sizes were similar along both the directions.