

Title Heat disinfestation of wheat in a continuous-flow spouted bed.
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Abstract

A continuous flow spouted bed with a draft tube was developed and tested for heat disinfestation of grain. Fifty tonnes of wheat naturally infested with mixed age populations of *Rhyzopertha dominica*, *Cryptolestes ferrugineus* and *Liposcelis bostrychophila* were passed through the unit. The draft tube helped achieve a comparatively uniform grain temperature (plus or minus 4 deg C) and minimized heat losses. Three target grain temperatures (55, 57 and 60 deg C) were achieved during the experiment. After initial heating, the 2 lower temperatures were maintained for periods of time likely to ensure disinfestation of *R. dominica*. No live insects were found after the heat treatment. The grain residence time was less than 1 second. The throughput of the system was 5 t/h, which was limited by the capacity of the pneumatic conveyor used to feed the infested grain into the heating chamber. However, the maximum capacity of the system could be as much as 10 t/h. Practical considerations for the scale up and commercialization of the spouted-bed disinfestor are the next steps in making this technology available to the end users.