

**Title** Identification of sources of microbial pathogens on cantaloupe rinds from pre-harvest to post-harvest operations

**Author** Luis A. Materon, Martha Martinez-Garcia and Veronica McDonald

**Citation** World Journal of Microbiology and Biotechnology 23 (9): 1281-1287. 2007.

**Keywords** Cantaloupes; Decontamination; Microbial pathogens; Packinghouses

### **Abstract**

Foodborne illness outbreaks involving cantaloupes have increased dramatically in the past 15 years in the United States and other countries. The need for the identification of the microbial sources that contaminate cantaloupe rinds has been raised by various investigators. This study was undertaken to identify the agricultural, industrial and human sources of microbial contamination from the pre- to post-harvest operations of cantaloupes grown at ten different farms in southern Texas. Results indicate that irrigation water contained a wide range of microorganisms that could cause human illness and were able to survive on the rind of cantaloupes before, at, and after harvesting. Fungi, total aerobic bacteria and total coliform bacteria were not completely eliminated by chlorinated water in the disinfection tanks of the six packinghouses under investigation. There were significant ( $P < 0.05$ ) reductions on rind populations of fungi and total aerobic bacteria as well as drastic reductions in total coliform bacteria on the rinds after the disinfection and rinsing steps in all packing facilities. There was no evidence of the presence of *Escherichia coli* O157:H7 on packed cantaloupes across packinghouses. Less than a geometric mean of 1 c.f.u. cm<sup>-2</sup> of salmonellae were detected on the surface of packed cantaloupes in two of the packinghouses, and approximately ten times more salmonellae were found on the packed fruit processed in the remaining packinghouses. A similar trend was observed with listeriae. Results suggested that microbial loads originating from river water may survive on the rind or may re-infest cantaloupes after the disinfection and rinsing process at the packinghouses. Disinfection techniques and aseptic handling of cantaloupes at the packing facilities need a closer evaluation to ensure a safe product.